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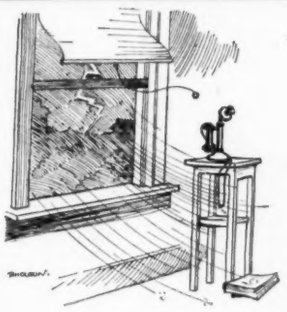

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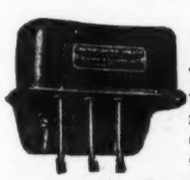

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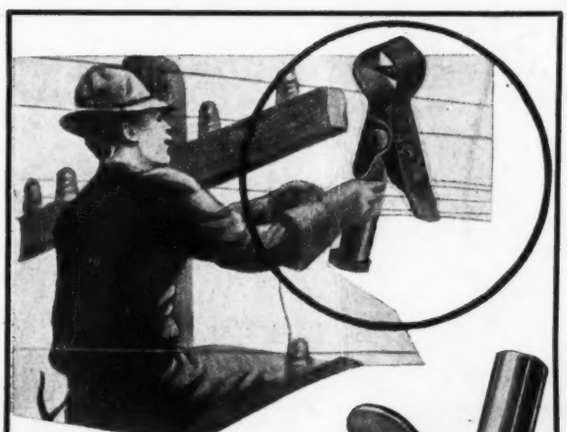

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Telephony.

THE AMERICAN TELEPHONE JOURNAL

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THE KIND OF MEN IN DEMAND.

To prove one's worth in dollars and cents, one must show his employers that he is worth more to them. There is always demand for such men.—James B. Forgan.

Improving Pay Station Advertising.

Pay station advertising is too passive, on many telephone properties. Publicity of this kind has been much improved in recent years by the use of illuminated signs, transparencies, etc., and by the strategic location of instruments, but too little is made of the advantages of telephoning in specific cases. The slogan "Don't Travel—Telephone" is an admirable one, indeed, but it is only a text whose applications can be pointed out thousands of times and in countless different ways.

We need more of the power of suggestion in this work; that is, the stimulation of pay station calls is not wholly a function of moderate rates, but it is very strongly influenced by impressing the potential patrons with the fact that the telephone offers the quickest and best solution of his desires to communicate with someone else, of his hitherto unrecognized need of so communicating.

Let local companies work out some advertisements along the specific line and see what the results will be. The beauty of it is that no additional costly outlay in plant is required, only the extension of publicity to include facilities already available and lying unused so large a part of the day and night. Of course, these strictures do not apply with so much force to the broader toll business, for the value of the long distance telephone has received and is receiving a vast amount of intelligent publicity. We refer more to the short distance calls which might be made to so much advantage by the potential patron, if he did but realize their economy and serviceability.

In working out these local pay station service advertisements, stress may profitably be laid upon simple and pointed incidents where resort to the telephone booth will save time, money, and worry, insuring the success of appointments, eliminating needless trips about town, expediting preliminary negotiations, and so on, to a degree which telephone men and many keen business men understand, but which a large portion of the great public still fails to appreciate.

Let the progressive companies hammer home by pithy, concrete examples, the wisdom of being a free spender at the telephone in these days of high-pressure living, and let our united efforts be directed toward stimulating the telephone habit even among those who look upon the expenditure of a nickel as an event (!) in the business or social day. Given the right kind of condensed, popular publicity, we believe that the receipts of local companies will not only be increased for the time being but that they will be steadily augmented by the forming of a still more general habit of reliance upon the pay station telephone by all sorts and conditions of men, in all times and at all places.

These are positive factors in the growth and development of pay station business.

Japan's Telephone Development.

Within the last few years, especially since the Russo-Japanese War, attention of people in this country has been directed toward Japan, and its development has been a matter of considerable interest. In Japan the telephone is government-owned and operated and the story of its development, compiled and published in commemoration of the 25th anniversary of its introduction, reveals many interesting facts. The text, being in the Japanese language, is not of particular interest, but the abstract prepared by M. Tonegawa, which appears on other pages, is of considerable interest. The illustrations in this history show the development from the beginning in the early days to the modern plant and exchange equipment and buildings of the present day. There is much evidence that telephony in Japan is fast taking its place in the awakening which that country is undergoing.

Factors Tending Towards "The Revival of Business"

One of a Monthly Series of Articles Written with a View of Helping Readers to Think, by Supplying Fundamental Information Rather Than Conclusions—Salient Features Bearing Directly Upon Economic Business Position of this Country—Conditions Influencing More Business

By Frank M. Huston,
Financial Editor, Chicago Evening Post—Editor, Rand McNally Bankers' Monthly.

While business is speeding along at the top-notch rate and conditions are better than normal and apparently stable, the most potent factor to be reckoned with at the present moment is our prospective agricultural production. Conditions on the farm are far from normal, in that weather and temperature have delayed planting and have seriously retarded spring farm work. Yet there is every reason to believe that nature is again coming to the assistance of this country with more than an ordinary crop production. At the moment, agricultural conditions are promising despite belated planting. There is an abundant moisture and once seasonable weather makes its appearance, the underlying conditions are favorable for an unusually rapid growth.

The one discordant sound by way of comment regarding crop prospects, relates to the winter wheat production and even this now promises to be greater in this country than was first expected. Official estimates of the Department of Agriculture place the prospective yield at 499,280,000 bushels, which is 4,000,000 bushels greater than this same authority estimated the prospective crop a month ago.

At first it was expected that the winter wheat production would break all records as there was planted last autumn 37,235,000 acres or nearly 5,000,000 acres more than the five years' average. The May 1 estimate, after allowing for the abandoned acreage, still places the total acreage to be harvested at nearly 1,000,000 greater than the average for the last five years. This in itself is reassuring and with favorable weather, holds the possibility of a greater yield than is now estimated. although that estimate falls short of last year's harvest 156,000,000 bushels.

Of course, so far we have no estimates regarding the spring wheat crop that are worth while considering, but there is a feature in the situation as it relates to wheat that must be reckoned with. Exports of wheat have fallen far short of those a year ago, and in consequence of this there will probably be a carry-over from the 1915 crop of something in excess of 80,000,000 bushels greater than the carry-over from 1914.

This means that if the remainder of the world does as well in wheat production as it did last year, the price of wheat and consequently the cost of flour and other products from wheat will not be increased to the domestic consumer. This in itself would be beneficial as abnormally high costs of living are a deterring factor to a period of prosperity.

This large reduction in the wheat acreage sown last fall is contributing to a great corn area that had been expected, for the reason that much of the abandoned wheat acreage has either gone into corn or oats.

With the volume of commodities moving from original sources into distribution in an enormous volume and with a tremendous traffic in merchandise and miscellaneous freight, our railroads are experiencing a share in the prosperity that has been manifesting itself in this country for about a year.

Industrial activity has become so great that difficulty is being experienced in securing the necessary labor. Wages are gradually increasing and this has its disturbing features in that those concerns, engaged in manufacture of articles now showing the enormous profits that are being reaped from the products of our factories going into the foreign markets or being stimulated by them, must compete in the labor market for men. Yet the enormous increase in wages contributes so much to the buying power of the country that the discordant factors are temporarily, at least, ignored.

The most reassuring feature in the general business situation, and especially as it relates to the jobber and the retail trade, is the fact that money continues easy, that investment supplies continue abundant, and that labor is well employed at a remunerative wage. But above all, there is additional reassurance in the fact that our railroads, which have been seriously handicapped for several years by credit conditions and restricted earnings, are gradually but steadily recouping their treasuries and rehabilitating their credit and finances.

This means that the railroads will gradually expand their purchases of materials for extensions and betterments and increase their facilities for handling the enormous volume of business offering for transportation.

For years the steel industry has been regarded as the barometer of business. This is due to the fact that usually it is first to show a fundamental improvement, for the reason that railroads become heavy buyers the moment that business shows signs of improving. In the experience of the last year the railroads were the last of the big industries to respond, the steel industry gathering its momentum from the enormous demand for iron and steel products growing out of the munition orders placed in this country.

Until these munitions were made and ready for transportation, railroad earnings showed little improvement, but the railroads now are coming into their own, and because of the enormous distribution of wages to their employes, every hamlet in the country feels the impulse of the general business revival that has taken place.

Nor is there any indication of a let-up in the volume of business until some important change takes place in the European situation. Even then it is doubtful if the reaction will be as serious as many had thought.

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The Development of the Telephone System in Japan

Abstract of "A Short History of the Development of the Telephone System in Japan" Which Was Compiled and Published in Japanese to Commemorate the Twenty-Fifth Anniversary of the Introduction of the Telephone in Japan

By Morisaburo Tonegawa

Since the public telephone exchanges were first started in Tokyo and Yokohama in December, 1890, the progress of telephone industry in Japan has been so remarkable that after 25 years we have now over 210,000 subscribers and 500,000 miles of telephone wires. From the financial point of view, these 25 years may be divided into the following periods:

Periods.	Years.	Sum of Investments (Yen).*
Preliminary	1890-1895	547,488
First extension	1896-1903	12,786,833
Military and transient	1904-1906	2,917,632
Second extension	1907-1912	26,362,780
Transient	1913-1915	8,756,765
Total		51,371,498

*A yen in United States coin is equivalent to 49.8 cents.

The telephone was first introduced in Japan in November, 1877, that is, the next year after the eminent invention of Prof. Alexander Graham Bell—but at that time it was only used for a few private purposes. After the introduction of the carbon microphone, however, the usefulness of the telephone service was gradually recognized among authorities.

In 1888, a special telephone line of copper wire, transposed at intervals, was constructed between Tokyo and Atami (66 miles) and in January, 1889, the practical trial of telephone transmission was made. In May of the same year, the line was extended to Shizuoka which is 115 miles distant from Tokyo. With this line the second trial was undertaken and it was ascertained that long distance transmission of speech was satisfactory for commercial purposes.

In December, 1890, public telephone exchanges were established in Tokyo and Yokohama by the government and since then the service has been exclusively operated by the government.

At the beginning of the public telephone service, the system of subscription had no restriction, any person being allowed to become a subscriber if the subscription fee were paid—and yet the number of subscribers was only 179 in Tokyo and 45 in Yokohama. But before long, the demand of the public for the telephone increased enormously and at the end of 1895, the number of applicants had reached about 7,000 of which only 3,000 subscribers were connected.

End of Fiscal Year.	Number of Exchanges	Number of Subscribers.	End of Fiscal Year.	Number of Exchanges	Number of Subscribers.
1890	2	343	1903	46	35,013
1891	2	821	1904	47	35,528
1892	4	1,504	1905	56	36,694
1893	4	2,672	1906	79	43,266
1894	4	2,843	1907	167	58,562
1895	4	2,858	1908	318	78,485
1896	6	3,232	1909	487	102,626
1897	8	5,326	1910	678	128,502
1898	13	8,064	1911	856	157,167
1899	20	11,813	1912	1,002	181,882
1900	25	18,668	1913	1,006	200,271
1901	25	24,887	1914	1,097	211,546
1902	29	29,941			

Table No. 1. Growth of Exchanges and Subscribers in Japan.

To meet such pressing demand, it became of urgent necessity to expand the service. Therefore, the first large extension was undertaken from 1896 to 1903. During this period, about 32,000 subscribers were newly connected and the total length of the toll line wires reached about 7,400 miles—and still about 21,000 applicants had not yet been connected.

As to the telephone fees, besides the subscription fee, a registration fee and the additional fees for special subscription, long distance subscription, desk apparatus, supplementary apparatus, etc., were established in December, 1897; and also since 1906, besides the direct line subscription, the party line and the extension line subscription services were commenced. Thus, in Japan, the flat rate has been adopted throughout since the opening of the service, although the proposal for the adoption of the measured rate was discussed by the authorities some years ago.

End of Fiscal Year.	Length of Subscribers' and Trunk Line Wires, Miles.	Length of Toll Line Wires, Miles.	Total Length of Telephone Line Wires, Miles.
1890	669	139	808
1891	1,435	139	1,574
1892	2,906	329	3,235
1893	4,068	332	4,400
1894	4,307	329	4,636
1895	4,851	410	5,261
1896	6,347	542	6,889
1897	15,521	908	16,429
1898	28,240	3,038	31,278
1899	39,475	4,783	44,258
1900	57,172	5,310	62,482
1901	79,780	6,245	86,025
1902	98,941	6,839	105,780
1903	106,004	7,397	113,401
1904	110,916	10,452	121,368
1905	113,102	12,055	125,157
1906	122,817	14,272	137,091
1907	154,078	21,474	175,555
1908	181,515	28,615	210,130
1909	224,563	38,235	262,798
1910	266,263	46,767	313,030
1911	332,923	56,038	388,961
1912	394,815	63,461	458,276
1913	426,036	64,857	490,893
1914	455,753	71,358	527,111

Table No. 2. Growth of Length of Lines.

In 1907, soon after the conclusion of the Russo-Japanese War, the second large extension was undertaken. At the end of this extension—that is at the end of 1912—about 181,000 subscribers were connected and the total length of the toll line wires was about 63,000 miles.

From 1912 to the present, the telephone is in the transient stage, and we have now more than 130,000 applicants not yet connected. The third large extension has been undertaken and is expected to be started in 1916 (fiscal year begins on April 1) to meet the urgent demand of the general public, with the sum of 22,500,000 yen.

The accompanying tables of statistics will give a clearer idea of the development of telephone service in Japan.

The development of the telephone art on the engineering side may be divided into three periods. In the first period, the Gower-Bell telephone set with a battery for calling was used and was afterward changed to the solid-back or Delville set with a magneto. The subscribers' lines were of the single circuit

type with overhead bare wires. The toll lines were only two. that is, the one connecting Tokyo and Yokohama and the other Osaka and Kobe. For the exchanges of these four cities, standard magneto switchboards or series multiple magneto switchboards were installed with about 3,000 subscribers connected.

End of Fiscal Year.	Number of Messages Within the Same Exchange Area.	Number of Toll Messages.	Total Number of Messages.
1890	256,908	8,080	264,988
1891	1,610,332	44,265	1,654,597
1892	3,117,441	54,499	3,171,940
1893	7,586,202	116,200	7,702,402
1894	13,317,490	180,314	13,497,804
1895	12,881,760	207,070	13,088,830
1896	12,016,081	222,326	12,238,407
1897	16,057,966	284,502	16,342,468
1898	27,364,935	341,392	27,706,327
1899	45,176,380	537,861	45,714,241
1900	65,844,742	733,227	66,577,969
1901	89,346,010	809,975	90,155,985
1902	117,423,373	924,781	118,348,154
1903	130,395,939	1,147,409	131,543,348
1904	143,899,359	1,326,645	145,226,004
1905	148,989,171	1,507,045	150,496,216
1906	152,767,511	1,898,297	154,665,808
1907	262,506,359	2,593,005	265,099,364
1908	320,706,712	3,816,340	324,523,052
1909	416,955,984	5,915,318	422,871,302
1910	548,999,342	9,152,942	558,152,284
1911	753,617,423	11,531,740	765,149,163
1912	841,753,240	14,970,339	856,723,579
1913	910,000,684	17,637,142	927,637,826
1914	1,026,376,381	18,666,521	1,045,042,902

Table No. 3. Growth of Number of Messages.

The second period, which succeeded the first extension, extended from 1896 to 1906. In this period the single circuit was replaced by the metallic and aerial and underground cables were much used.

The parallel multiple magneto switchboards were introduced

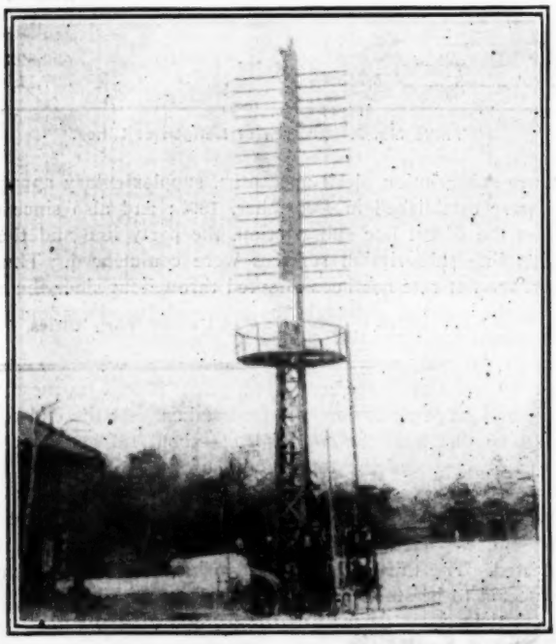


Fig. 1. Iron Pole Formerly Used for Aerial Lines in Japan.

in 1897, and extensively used in this period until the common battery switchboards were first installed at the Kyoto exchange in 1903. These on account of their excellent working, gradually began to be used in large cities, the parallel multiple magneto switchboards being limited for moderate size cities of less than about 4,000 subscribers. The longest toll line between Tokyo and Sasebo (about 880 miles) was also completed in 1905 for military purposes during the Russo-Japanese War.

The third period began with the second large extension, that is, from 1907. During this period, common battery switchboards were largely used in large cities, while for moderate size cities, parallel multiple magneto switchboards with supervisory signals were designed. The 400-pair, fine wire underground cables, which were first tried in 1906, were much used in this period; 600-pair cables have also been on trial in Tokyo and Osaka since 1914. It must also be added here that enameled switchboard cable was first tried at the Shiba sub-exchange, Tokyo, in 1908, and as its superior property for moisture was observed, it became extensively used in common battery exchanges. This was the first trial of the enameled switchboard cable in the world.

As to the manufacturing industry of the telephone apparatus and the other materials, about 30 per cent. of their total value was supplied from America and Europe until a few years ago. But, by the incessant effort and patience of manufacturers, the percentage gradually decreased lately to 5.6 per cent. in 1914.

At present, iron wire, steel wire and a few others are the only things supplied from abroad.

In closing it will be interesting to give short explanations of

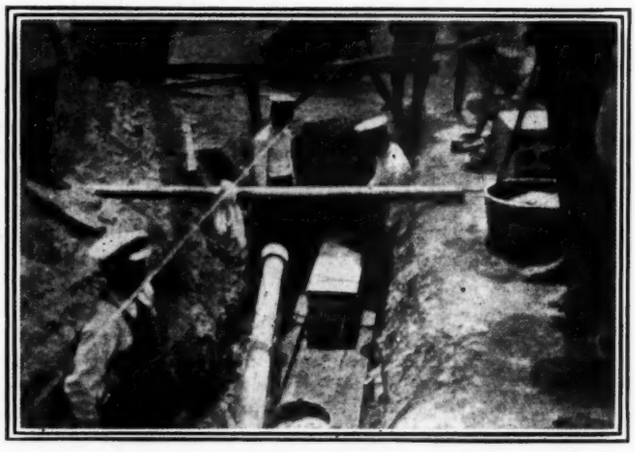


Fig. 7. Laying Concrete Ducts in Osaka, Japan.

the photographs and figures inserted in the "Short History," some of which are reproduced in connection with this abstract.

Fig. 1. The iron pole for aerial telephone line near Shibasonobashi, Tokyo, which existed until 1911. In the early days of the telephone service, as aerial bare lines were exclusively used, large iron poles became necessary with the increase in the number of subscribers. The photograph is the relic of that time.

Fig. 2. View of subscribers' telephone lines near Iigura, Tokyo.

Fig. 3. View of Boucherising at the village of Okayama, the district of Sambu, in the prefecture of Chiba in 1902. In Japan Boucherising was chiefly used until a few years ago. At present creosoting is also much used.

Fig. 4. The entrance of underground cables at the Kita sub-exchange, Osaka. The Kita sub-exchange is one of the newest exchanges installed with common battery switchboards.

Fig. 5. The entrance of underground cables at the main exchange of Osaka.

Fig. 6. View of the laying of cast iron ducts for underground cables in Tokyo. Cast iron ducts were first used when underground cables were adopted in 1897. At present, vitrified clay ducts are also largely used.

Fig. 7. View of laying concrete ducts in Osaka.

Fig. 8. View of construction of a manhole in Osaka.

Fig. 9. The bridge for underground telephone cables near Mizutanibashi, Tokyo.

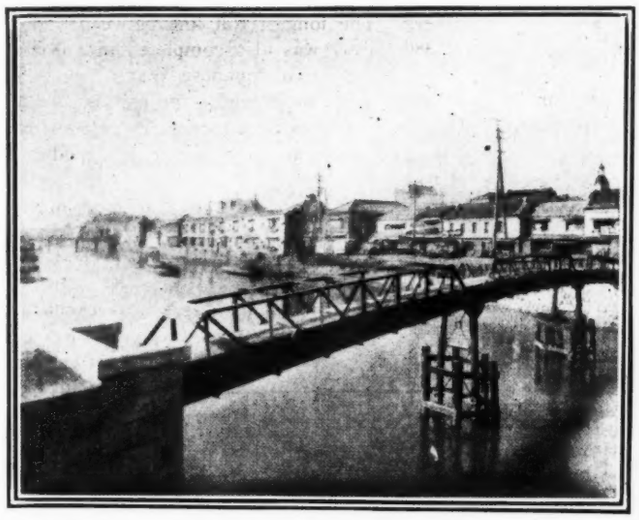


Fig. 9. Bridge for Underground Cable Near Mizutanibashi, Tokyo.

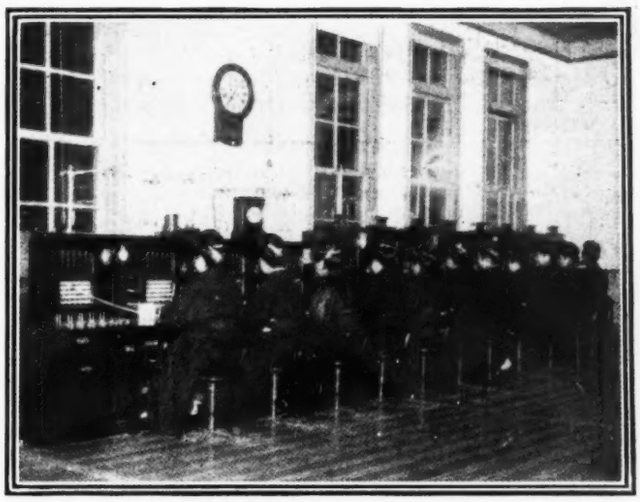


Fig 14. Standard Magneto Switchboard Now Used in Japan.

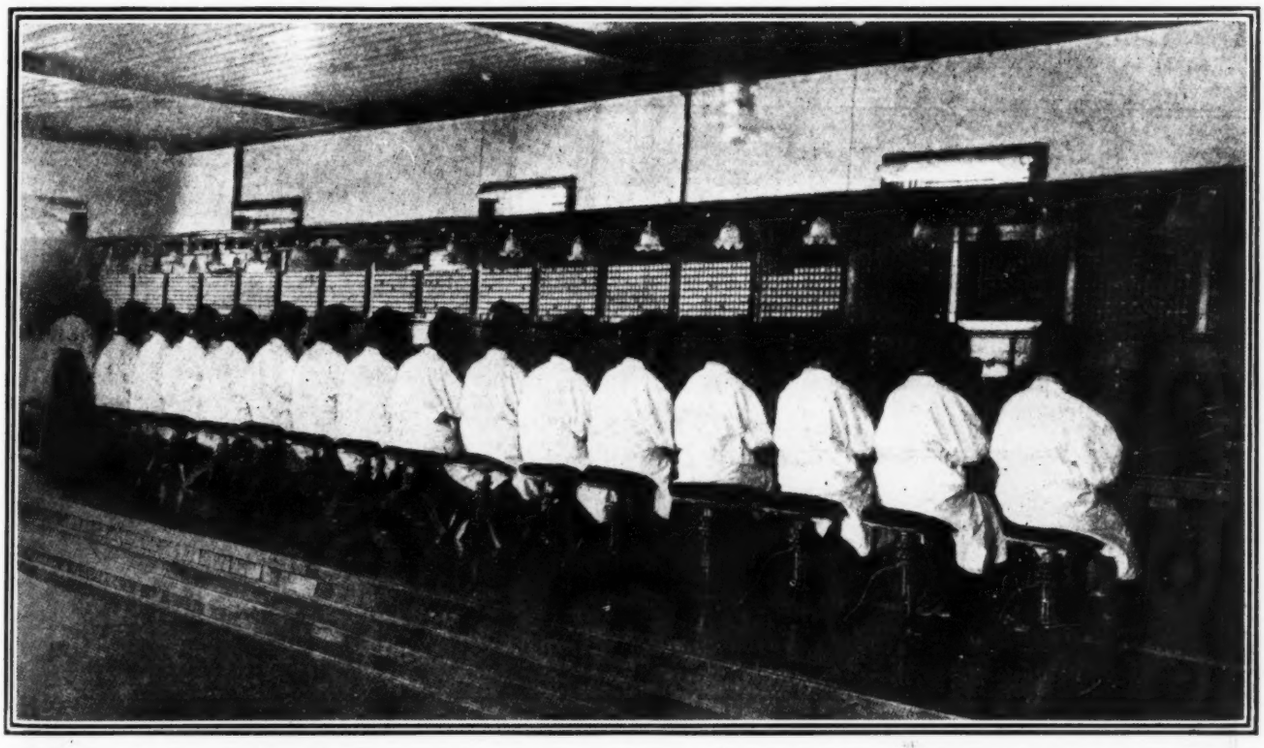


Fig. 17. Parallel Multiple Magneto Switchboard, Installed in Hiroshima Post Office in 1907, Now in Use in Many Cities.

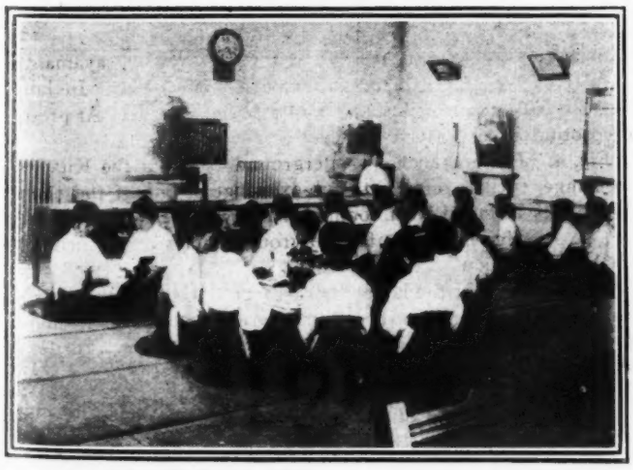


Fig. 19. Operators' Sitting Room, Tosabori Sub-Exchange, Osaka.

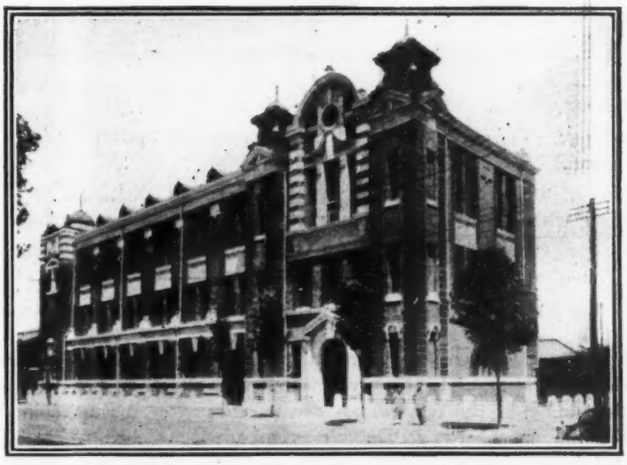


Fig. 28. Outside View of Kita Sub-Exchange, Osaka.

Fig. 10. The bridge for telephone underground cables over the River Azi, Osaka.

Fig. 11. The toll telephone line near Kawasaki in the prefecture of Kanagawa.

Fig. 12. The toll telephone line near the village of Kita, in the prefecture of Miyagi.

Fig. 13. Standard magneto switchboards at the beginning of the telephone service. (Switchroom at the Tokyo exchange in 1890.)

Fig. 14. Standard magneto switchboards in use at the present time. (Switchroom in the Nara Post Office.)

Fig. 15. The first series multiple magneto switchboards. (Switchroom of Tokyo exchange in 1893.)

Fig. 16. Series multiple magneto switchboards at present time. (Switchroom in the Nagano Post Office.)

Fig. 17. Parallel multiple magneto switchboards with supervisory signals. (Switchroom in the Hiroshima Post Office.) This kind of switchboard was first designed for the switchroom in the Hiroshima Post Office in 1907, and since then they have been installed in many cities.

Fig. 18. Common battery switchboards. (The switchroom of the Tosabori sub-exchange, Osaka.)

Fig. 19. The operators' sitting room of the Tosabori sub-exchange, Osaka.

Fig. 20. Common battery toll boards at the Osaka toll exchange. These are the latest of common battery toll boards in Japan.

Fig. 21. The testing room of the Tokyo exchange at the time when series multiple magneto switchboards were installed.

Fig. 22. The testing room of the Kyobashi sub-exchange, Tokyo, at present.

Fig. 23. The power plant of the Kanda sub-exchange, Tokyo, completed in 1915.

Fig. 24. Gower-Bell telephone set and common battery solid-back wall set. The Gower-Bell telephone set was used at the beginning of the service, but a few years after it was replaced by the solid-back or Delville telephone set. At present the solid-back telephone set is used for the common battery and long distance subscribers, while the Delville set is used for the local subscribers belonging to the magneto system.

Fig. 25. Common battery desk set, magneto desk set and magneto wall set.

Fig. 26. Outside view of the Tokyo exchange in 1893. Notice the gigantic appearance of the telephone poles.

Fig. 27. Outside view of the Kanda sub-exchange, Tokyo, completed in August, 1915.

Fig. 28. Outside view of the Kita sub-exchange, Osaka, completed in June, 1915.

Fig. 29. Outside view of the Sannomiya sub-exchange, Kobe, completed in February, 1913.

Fig. 30. Plan of the Sannomiya sub-exchange, Kobe.

The writer's sincere thanks are due to K. Ogawa for his kind assistance.

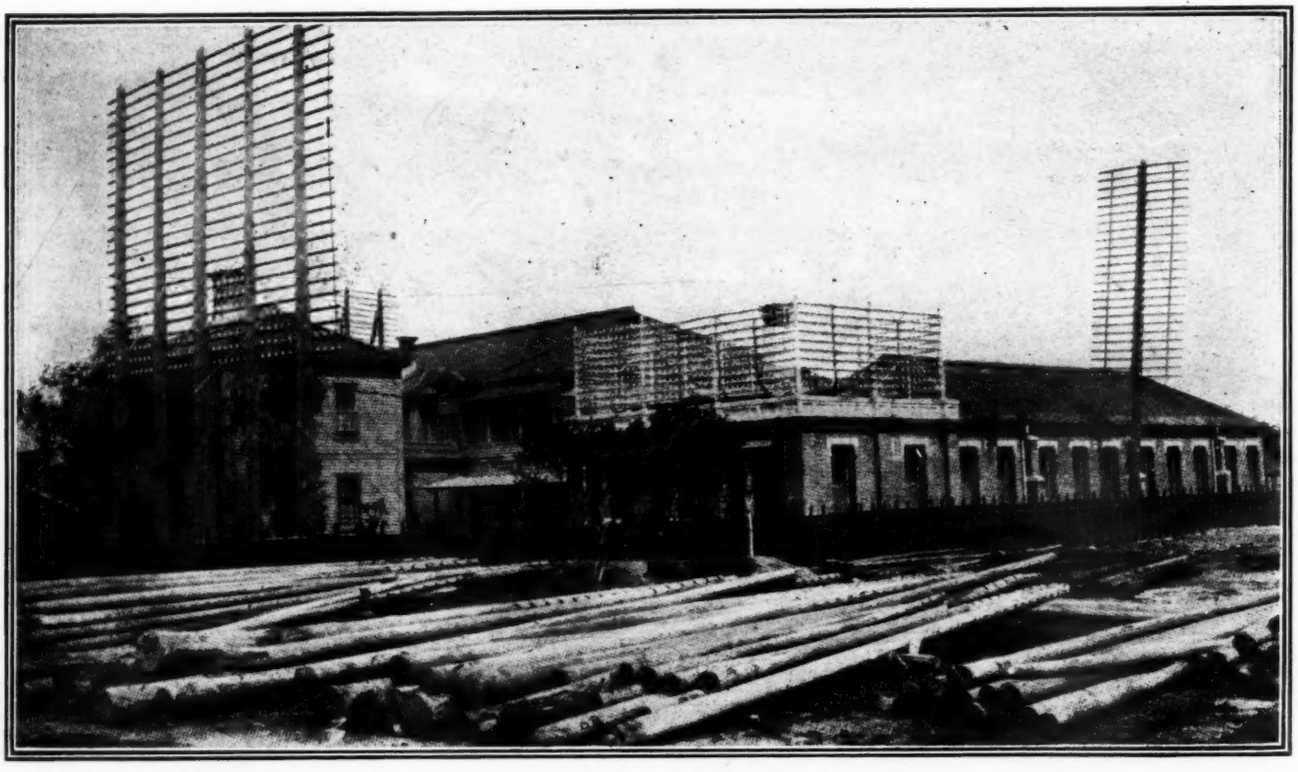


Fig. 26. Outside View of Tokyo Exchange in 1893.

Hawarden (Iowa) Company Acquires Three Exchanges.

W. J. Brownell of Hawarden, Iowa, president of the Farmers & Merchants Telephone Co. of that city, has just purchased the telephone plants at Blairsburg, Williams and Jewell, in Hamilton county, Iowa, for $40,000. The Blairsburg and Williams lines were owned by F. C. Vaughan of Williams, for which were paid $25,000. The Jewell plant was owned by a stock company, in which F. G. Snyder and William Anderson were the principal stockholders. This latter property was bought for $15,000.

As was reported in TELEPHONY a short time ago, the Farmers & Merchants company has also purchased the holdings of the Martin Telephone Co. of Webster City, Iowa, for $200,000.

To Erect New Exchange at Warrensburg, Mo.

The Johnson County Home Telephone Co. of Warrensburg, Mo., has purchased a lot opposite the post office in Warrensburg upon which it will erect a modern telephone exchange building. It is planned to have all wiring coming into the new exchange underground. When the building is completed, an up-to-date common battery switchboard will be installed.

Telephone Competition in and Around Philadelphia

What the Keystone Telephone System Has Done for Telephone Service—Article by Edward M. Cooke, Second Vice-President of the Company, Tells of the Telephone Conditions in Philadelphia Before and After Competition—Benefits of Competition

A striking tribute to the public value of competition in the telephone business is found in an address made to the employes of the Keystone Telephone System, of Philadelphia, by Edward M. Cooke, second vice-president of the Keystone company. The title of Mr. Cooke's address was "Keystone Telephone Competition Hereabouts—Some Comments on the Presence of National Rivalry and Unlimited Service in this Vicinity."

The address contains so many valuable suggestions that it is reproduced in full:

"With the exception of one month at the time of the outbreak of the great European war, the Keystone Telephone Co., from its inception, has shown a steady monthly, as well as yearly, upward progress in the number of telephone stations in its system.

While the gain in stations in the first three months of 1915 was good, the gain in the first three months of the present year was more than 200 per cent. greater. Still I am not satisfied. It seems to me that we should go ahead more rapidly. The whole trouble is that the truth about the efficiency and the economy of our telephone is still unknown to many people. Wherever it becomes known, there we gain subscribers.

Now, how shall be get this truth into the minds of all those who don't know about it? We can only do that by aggressive educational work. The most effective instrument at our command for that task is the little army of people who are employed by the company. This does not mean salesmen alone, but every one who works for us in any capacity. There are one thousand of us, and if we have before us the whole truth in convenient form, and individually spread it wherever we go, think what an effective medium for education it would prove.

Some months ago, in a letter, I called attention to certain features of telephone competition here and elsewhere. That letter was distributed among our people and used effectively by them. At this time, I should like to add some thoughts thereto. These are not all new facts, but it should be our constant endeavor to so marshal and present the points in the case of the Keystone telephone that they can be readily referred to and the truth thus generally and authoritatively shown to the public.

The Engineer's Advice.

A well known telephone engineer from the West spent some days recently examining the Keystone telephone plant and the methods of operation. When he was about to return home, he was asked to criticise what he had seen. He said:

My chief criticism of your organization is that you spend too much time and money on complaints from subscribers. You take them too seriously, and, as a result, they cost you proportionately two or three times what they cost any other telephone company I know. Don't forget that a lot of complaints in any business are groundless. That is much more apt to be true in the telephone industry than any other. In many cases, these complaints are the result of the subscribers' bad nerves or ill temper or impatience or some other element that is incurable on your part.

You can't alter human nature with a screw driver, and you may as well avoid the expense of trying to do so. If you will just let the complaining subscriber alone for a few hours, the complaint will usually either cure itself or be forgotten. Don't send anybody out on the case, at least until you hear from it a second time.

Notwithstanding that engineer's opinion, our method we believe to be the only up to the minute way of handling complaints. We invariably speedily respond to all complaints and promptly adjust them. It takes a lot of time and money and a large corps of the inspectors to do that, but we do it just the same. It not only brings to us the pleasurable pride inevitably felt in work well done, but it pays cash dividends in increased patronage.

The telephone is an exceedingly delicate mechanism, but it is our business to see that it works. Into its operation the human element enters largely, but so far as the employes of the company are concerned, it is our mission to see that prompt, efficient and courteous service is rendered. So the moment we get a complaint, some one is assigned to investigate. If it is our mechanism or our operators that are at fault, we correct it promptly. If it is necessary to put in new equipment or a new operator, that is done. The result is that we are confident that we give the best telephone service in the world.

Before and After.

The Keystone telephone system began operations in 1902. Prior to that time there were some 12,000 telephone stations in Philadelphia. *Those* 12,000 *were the trivial accumulation of* 21 *years without competition. Any one who wanted a telephone in those days had to live in just the right street, meet just the unalluring conditions offered, submit to indifferent service, and pay the price demanded.* Naturally, there were only a scattering few subscribers and those who did have telephones could not reach most of the people they wanted to communicate with. They had to transact their business usually by the slower method of personal visit or by messenger or by mail.

Then came the Keystone company with its healthy and inpiring competition. The unlimited service dropped from $160 *per year to* $90. Subscribers were eagerly sought in all directions. No matter where they lived, within reason, having a telephone was made easy for them. *Pay station calls were reduced from* 10 *cents to* 5 *cents.* The cost of calls to Camden was similarly cut in half. The average price on measured service per message had been 8 cents. Its upper cost limit on the Keystone was 5 cents.

We inaugurated the then brand new scheme of furnishing each measured service subscriber with his own meter. That enabled him to keep his own record of calls and did away with the unnecessary disputes about the count. The former average cost of all classes of telephone service was over $100 per year. The Keystone was less than $50. Underground conduits were then scarcely used. But the Keystone company gridironed the city with its subways, and overhead wires disappeared in all directions.

Competition brought about a revolution in service. Efficiency was the watchword. Courtesy to the people was a necessity. The public became the boss instead of the operating company. The material and evident result of all this was wonderful. Both telephone systems grew like well-watered vines beneath the warm spring sunshine.

In the 14 *years that have followed,* 160,000 *telephones came to Philadelphia. Just think of it!* 12,000 *in the* 21 *years before* 1902, *with a single service, and* 160,000 *in the* 14 *years after* 1902, *with two companies straining every nerve to get new business. That is the stimulating and healthful effect of competition.*

The Same Results Elsewhere.

Elsewhere we find the same story about the results of telephone competition as in Philadelphia and other communities

served by the Keystone system. The committee on post office and post roads of the national House of Representatives last year was investigating the telephone question. Many public hearings were had. At one of these, on January 15, a witness testified as follows:

I have a list of 60 cities in the United States. In many of them competition prevails; in some of them it does not. The result as shown in that table is that 24 cities, averaging 342,486 in population, pay an average rate of $53 under competition, while the remaining 36 cities, averaging 188,629 in population, without competition, pay $81.

That is eloquent testimony. *Competition is a necessity because human nature is what it is.* Without the fear of our competing fellow man, we are sure to be inefficient and high-priced and generally unruly. With competition standing guard over us, we are afraid to be anything but our best. That is true in every field of human effort. It is just as true in the telephone industry as it is in any other. There is no symptom of cut-throat methods about telephone competition in Philadelphia. Both companies thrive as they live. Both of them make money and each one is better in service and general conduct because of the honest rivalry between them.

The Keystone Telephone Co. has accumulated a handsome surplus and reserve for the renewal of its plant amounting to $2,311,762. The total net profits from operation last year were $361,013. Out of this was paid the regular 6 per cent. dividend on the preferred stock and an additional 4 per cent. on the cumulative account, leaving a safe margin for proper additions to the reserves. The distribution of profits, as well as the interest on the bond issue is, of course, made largely among home people, for most of the securities of the company are held in Philadelphia and vicinity. The excellent financial showing of the company marks indubitably the confidence of the people in the useful mission of the Keystone system.

The Two Telephone Highways.

The ice-bound igloo of the Eskimo and the sun-baked mud hut of the South Sea Islands' savage are constructed without windows and with a single tiny door. Such homes do very well for the restricted life of their simple-minded and humble owners. But the modern business man of civilization and big, broad ideas must go to the other extreme. He wants a lot of entrances to his business home. He wants plenty of light and fresh air and plenty of windows and plenty of elevators and plenty of delivery wagons and lots of telephones.

The success of his activities depends on the abundance of his facilities. You never hear him talk about the alleged nuisance of two telephones. Two telephones mean to him no more trouble than two railroads or two highways of any kind. They are, in fact, purely and simply, necessary highways of thought and speech to and from his business house. They bring orders to him. They bring help for today and hope for tomorrow. They bring money to him.

Why should he lock and bar one of his telephone entrances any more than he would shut one of his doors in the faces of those who come to buy from him? He could well afford to pay a handsome premium in order to enjoy the advantages of the two lines. But as a matter of fact, in Philadelphia, he can have both services at less than the cost of one in other cities where there is no competition. With the two services he reduces to the minimum the possibility of ever being cut off from communication with those he desires to reach, or those who wish to communicate with him. He practically eliminates the 'wire busy' interruption to the flow of calls outward and inward.

The Thousands of Daily Users.

The fact that there are over 1,200 private branch exchanges in our system covering practically all the great commercial and industrial plants of the city, speaks eloquently of the business men's judgment as to our service. These are the large users and must have the best and the most economical.

Once each month, we make an accurate count of every message passing over Keystone lines. Last month's one day record was 195,000 messages. That means that twice that number of people, or 390,000, daily use Keystone telephones. It is unthinkable that any alert manager of a business enterprise can look at those figures and allow himself to be disconnected for a single day from that main highway of commerce talk.

The man who does not have a Keystone telephone is, in fact, telling the customer who has our unlimited service that this customer must pay for the privilege of going into his business home to buy. He virtually tells this customer that the free door is locked, but that if that customer desires to enter, he can pass around to the measured service door, where, by paying a fee, he will be admitted. The foolish man spends thousands in advertising and inviting business, and then when the prospective purchaser arrives, he is charged admission for the privilege of buying.

The Preponderance of Traffic.

More than 60 per cent. of the business messages of the community pass over Keystone lines now. In some divisions of the business world, the percentage is much higher than that. A notable case is that of the financial houses. Something more than 80 per cent. of the telephone traffic in the local financial world is carried by the Keystone system. The fact that ours is the official telephone of the stock exchange contributes largely to that end. But there are other reasons. That the service is unlimited, with the attendant reduction in telephone cost, is a main consideration.

Then, too, our service is faster than the other. The city electrical bureau made, without our knowledge, a convincing test of this. The annual report of that bureau, issued last year, showed that ours was almost twice as rapid as the other. The exact figures were an average of 3.7 seconds to reach the bureau over our lines and 6.9 seconds over the other company's wires. Then the transmission is better, due to the special character of the instrument and the size of the wires used.

With the stock broker and banker, whose hours of active operation are more limited than others, two telephones are positive helps rather than hindrances. He uses them as easily as he uses two call bells or two messengers. He gets quick action through them. But while it is the busy business man who chiefly uses the Keystone wires, they are in constant demand for a wide range of other purposes. More than seven thousand people daily ask our operators, 'What time is it?' At the climax of the baseball season last year, nearly twelve thousand enthusiastic fans passed over our lines daily the question, 'What is the score?'

Many people depend every day on our operators to awaken them at a certain time. A fire alarm in any part of the Keystone territory is inevitably followed by a volley of inquiries from subscribers as to the location of the blaze. In the case of a large fire, these inquiries run into thousands and, as they have all to be answered within a very brief period, prove the severest test of the service.

Must Have Distribution.

Somebody wrote the other day saying that the telephone was a nuisance because he had to run downstairs to answer it. Of course, under those circumstances it was a nuisance. For 1½ cents a day that man could have had an extension telephone upstairs right under his nose

To get the best out of your equipment you must have liberal distribution of it. For a large establishment to have one lone telephone station, necessitating a trip to it every time there is a call, is like having a rule requiring all employes to meet every visitor at the front entrance, instead of having all visitors go to the office where their business is to be transacted. Every incoming and outgoing telephone call should go right to or

from the proper desk. That saves time and patience, and the daily cost of the necessary additional equipment is trivial.

Home Ownership.

There is a railroad in a Western state that was originally financed almost wholly by the people of its home commonwealth. Nearly every member of its board of directors and every official of the company was a resident of that state. The management was right on the job at all times and the road was operated with wonderful efficiency. It enjoyed, in a peculiar way, the confidence and the pride of the people along its lines and with that came, of course, material and notable prosperity.

A few years ago control of that road went into other and alien hands. Its headquarters were moved to New York, and from there its important officials and directors operated it. The evil results came quickly. The personal and mutual interest based on the fact that owners and customers were neighbors in close touch with each other was gone. The fine responsiveness of the management to the patrons vanished. Efficiency was a thing of the past. The road's progress down hill was notable.

That is the whole story of home ownership in a nutshell. The home ownership and management of the Keystone Telephone Co. is one of the strongest influences in its success. That is not the result of sentiment. Business is a hard, cold fact and not a sentiment. The Keystone telephone business is a hard, cold fact. But it enjoys all the inevitable benefits of being owned and directed by home people. The guidance of its affairs is wholly in the hands of those who daily walk the home streets and intimately know the wants of home people. They cannot escape from complaints of poor service. They cannot but feel a stimulating pride in the company's efficiency.

The Long Distance Business.

The great preponderance of traffic for all telephone companies is local. This is an important operating fact not generally recognized by the public. Most companies do not have more than 2 per cent. of their total business in what is known as long distance or toll messages. Nevertheless, the Keystone company has provided for its long distance business and such traffic is handled with the same care as the local messages.

In addition to our long distance lines, we have traffic arrangements with all the surrounding Independent companies. Eighty-six companies reaching 2,300 communities are included in this system. Two large submarine cables containing 400 wires cross the Delaware river between Pennsylvania and New Jersey and are used exclusively for the Keystone company's interchange of traffic between the two states.

The Truth in Brief.

Among the points to be especially emphasized about the Keystone service then are:

The unlimited service is quicker and cheaper. For those who prefer it, we furnish a measured service.

Those who have Keystone telephones should use them whenever possible. It is like throwing money out of the window to use measured service, when an unlimited telephone is available.

Competition in telephone systems, as in every walk of life, is stimulating as to efficiency and depressing as to cost.

Sixty per cent. of the local messages are carried over the Keystone lines, and no efficient manager will allow himself to be cut off from this main artery of commercial speech.

Home ownership of any enterprise means more watchful management, more satisfactory service, and the Keystone company is home owned.

There is no more difficulty about dealing with two telephones than there is about two doors, two elevators or two railway lines.

No matter how much you use it, you can have the Keystone unlimited telephone for less than 25 cents a day. As insurance against business loss alone that is a trifle.

Again let me remind you that every man, woman and child connected with our company can help to spread the facts about our service and so assist in the selling of telephones. Once the service is sold, we should be energetic in having the equipment promptly and efficiently installed. Insist on its use whenever possible. Then make our service in courtesy and effectiveness so notable that once a Keystone subscriber shall inevitably mean always a subscriber."

The Power of Money.

(With apologies to Henry Clay Oneliner.)

By B. Franklin Oneliner.

Can you remember,
* * *
Not many years ago
* * *
Of reading about the Grand Opening
* * *
Of the Automatic Telo. Co.
* * *
At Chicago?
* * *
And of the toll connections
* * *
Which this great company
* * *
Had just completed?
* * *
We all had dreams
* * *
Of all the Independents in this territory
* * *
Getting together,
* * *
And building a *real* toll system.
* * *
Somebody else got a glimpse of that vision, too
* * *
And acted first.
* * *
We were startled by the news,
* * *
"Tunnel Company sold to the Bell!"
* * *
We could not understand
* * *
Why this company of men
* * *
With their bright prospects
* * *
Would sell out.
* * *
But later we learned
* * *
That the property was all paid for,
* * *
And a *million* besides
* * *
For the "good of the cause!"
* * *
Then we began to see.
* * *
What?
* * *
A Great Corporation,
* * *
That would stop at no limit
* * *
To protect itself and its Universal Toll System
* * *
From competition!
* * *
There was an Independent toll system
* * *
In the Northwest
* * *
Which several years ago
* * *
Gave promise of great things.
* * *
It was the Northwestern Long Distance.
* * *
It connected Portland, Tacoma, and Seattle,
* * *
And came nearly reaching Spokane,

By way of the Postal Telegraph.

* * *

It didn't quite make it. But that's another story!

* * *

What happened to this company?

* * *

Same old story.

* * *

The vaults of the Bell treasury opened up

* * *

And the Home company, of Tacoma, vanished as by magic.

* * *

Then the Home, of Seattle, followed.

* * *

All the great feeders

* * *

Of an Independent toll system in the Northwest

* * *

Are gone!

* * *

So the people of the Northwest

* * *

Who talk long distance

* * *

Pay their money, not to the Northwestern,

* * *

But to the A. T. & T.

* * *

Many other stories like these

* * *

Might be told.

* * *

This great Bell system

* * *

Cannot destroy competition

* * *

In a fair fight,

* * *

With fair rates, and improved service.

* * *

Oh, no!

* * *

It attacks its enemies singly,

* * *

Not with a knife,

* * *

Nor with a gun,

* * *

But with a Big Roll.

* * *

It is irresistible.

* * *

We have seen many men who were vitally interested

* * *

In the success of Independent telephony,

* * *

Risk their money in a fair fight.

* * *

But when the test came

* * *

And they were face to face with the Octopus

* * *

With his eight arms, all loaded with the golden coin,

* * *

Well, it's a shame to take the money,

* * *

But a great many have done it.

* * *

They are not all to be censured,

* * *

For embracing the opportunity

* * *

To retire with a profit

* * *

Rather than risk a ruinous fight

* * *

With a heartless corporation.

* * *

Andrew Carnegie did the same thing.

* * *

It is the great power of unlimited money

* * *

Combined with a dream

* * *

Of a Universal System

* * *

Which has crushed the bright hopes

Of so many competitors.

* * *

But don't worry!

* * *

Independent telephony still remains unconquered.

* * *

It has had some black eyes

* * *

And broken ribs

* * *

And bad bruises;

* * *

But it's still in the ring.

* * *

It is just getting ready

* * *

For another round.

* * *

And if the referee

* * *

Will just penalize

* * *

The big enemy

* * *

For hitting below the belt

* * *

There is going to be a fight yet!

Census Bureau's Summary of Wire Industry for 1914.

A preliminary statement of the general results of the 1914 census of manufacturers with respect to the wire industry has been issued by Director Sam L. Rogers, of the Bureau of the Census, Department of Commerce. It consists of a statement of the quantities and cost of the wire rods used by the wire-drawing mills, the production of drawn wire from the different metals, and the quantities and values of the products manufactured, prepared under the direction of William M. Steuart, chief statistician for manufacturers.

Reports were received from 98 wire-drawing establishments in 1914, the total products of which for the year were valued at $172,600,587. Of these 98 establishments, the principal business of 53 was the drawing of wire and the manufacture of wire products from rods which were either purchased or transferred from independently operated rolling mills under the same ownership; 24 rolled iron and steel rods and drew the wire in the same plants; 19 were wire-drawing departments operated in conjunction with copper or brass-rolling mills; and the principal business of 2 was the manufacture of electrical machinery, apparatus and supplies.

The wire products comprise 2,465,383 tons (of 2,000 pounds) of steel and iron wire and manufactures of wire, valued at $116,215,503; 135,437 tons of copper wire, insulated copper wire, and woven and fabricated wire products, valued at $42,928,550; 39,614,500 pounds of brass wire and wire products, valued at $6,366,342; 749,224 pounds of German silver wire, valued at $238,078; and wire of other metals and alloys—bronze, zinc, nickel and nickel alloys, and copper clad steel—to the value of $1,251,415.

At the census of 1909 there were reported 93 establishments, with products valued at $180,083,522. Of this amount, $120,585,637 represented the value of 2,471,858 tons of steel and iron wire and manufactures of wire; $51,288,283 the value of copper wire and wire products; and $5,579,813 the value of wire and wire products of brass, German silver, and other metals and alloys.

The value of all products in 1914, therefore, was $7,482,935, or 4.2 per cent. less than in 1909.

Construction Plans of Zenith Telephone Co., Duluth, Minn.

Included in the expansion activities of the Zenith Telephone Co., of Duluth, Minn., for this summer, are the building of 20 miles of rural lines and the laying of 60,000 feet of conduit in the city.

Fundamental Principles of the Telephone Business

A Reading Course Designed to Present Logically the Principles Which Underlie Successful Organization and Operation of Telephone Properties—Prepared Under the General Supervision of Stanley R. Edwards—Part I, Telephone Economics, by James H. Shoemaker, Completed June 26, 1915—Part II, The Corporate Telephone Organization, by J. C. Kelsey and S. R. Edwards, Completed September 25, 1915—Part III, Telephone Accounting and Auditing, by James H. Shoemaker, Completed January 15, 1916—Installments Now Being Presented Comprise Part IV, Telephone Finance, Written by J. C. Kelsey and S. R. Edwards

Quiz Questions on the Preceding Installment.

132. How are contracts made a means of obtaining money fraudulently from a corporation?

133. How may a corporation be manipulated for the benefit of another company?

134. For what purpose may confidential information relating to a corporation's intentions be used?

135. What practices have directors followed to obtain personal advantages?

136. How were construction companies responsible for the difficulties encountered by many telephone companies in raising money?

137. What method has been used by some corporations to maintain the value of their securities?

138. What is the present position of the minority stockholder of a corporation?

139. What impression prevails as regards the power of commissions over public utility financing? How does it come about that financing of public utilities is placed under the supervision of the state? To what kind of securities do the various legislative acts apply as regards public utility financing?

140. What is necessary before a public utility can issue securities? In a utility commission's certificate authorizing the issuance of securities, what must be shown?

141. Outline the purposes for which a public utility has a legal right to issue securities.

142. What is the procedure when a public utility desires to issue securities? What information is required in an application to a commission for authority to issue securities? Is any provision made to prevent fraud in obtaining permission to issue securities?

CHAPTER XI. Commission Regulation of Securities (Concluded).

143. *Authority of Commission to Obtain Information Pertinent to a Utility's Finances.*—In determining whether a proposed issue of securities complies with the provisions of the public utilities law, a commission is authorized to make such inquiry or investigation, hold hearings and examine witnesses, papers, documents or contracts as it may deem of importance in enabling it to reach a decision.

If a utility ask for permission to issue bonds, the commission generally inquires into the mortgage conditions, the percentage of the amount expended for additions and betterments that the company is allowed to take down bonds to cover, and the amount of earnings required before a requisition upon the trustee for bonds, will be honored.

144. *Considerations Influencing a Commission in Arriving at a Decision Regarding an Issuance of Securities.*—The ability of a corporation to market its securities for which it desires permission to issue at a warrantable price, is considered by commissions in arriving at their decision. Many of the commissions specify the minimum price at which bonds may be sold as, for instance, the Ohio commission in authorizing the issuance of securities by the Ohio State Telephone Co. stipulated a price of 80 as the lowest at which the company's bonds could be sold. The California commission has set as the lowest limit 82. The law of one state says:

"No stock or certificate of stock shall be sold at a discount or a premium without the approval of the commission. If sold at a discount the commission shall take a record and give it such publicity as it deems best at the expense of the utility."

Bonds are a direct lien on the property of a company while stock is a lien on the assets that remain after the liabilities are satisfied. There is therefore less danger, if either stock or bonds must be issued at a discount, or below par, to sell the stock at the lower price than the bonds.

The personnel of the management, its efficiency, relations with the public and its general policy also have an influence with a commission in its consideration of security issues.

145. *Power of Commission to Ascertain that Proceeds of Sales Securities are Utilized as Specified.*—To insure that the proceeds of an issue of securities are used as specified in their orders, commissions are quite generally authorized to require utilities to account for the disposition of the proceeds of all sales of securities. For this purpose, such rules and regulations may be established as deemed necessary.

A recent order of the California Railroad Commission specified that a certain telephone company "shall keep separate, true, and accurate accounts, showing the receipt and application in detail of the proceeds of the sale of the stock and notes herein authorized to be issued; and on or before the 25th day of each month the company shall make vertified reports to the commission stating the sale or sales of said stock and notes during the preceding month, the terms and conditions of the sale, the moneys realized therefrom, and the use and application of such moneys."

146. *Commission Action as Regards Financial Plans of a Merger or Reorganization of Utilities.*—In the consolidation or

merger of two or more companies, the capitalization of the public utility thus formed is subject to the approval of the state utility commission. The commission, however, cannot approve a capitalization exceeding the sum of the capital stock, at its par value, of the corporations so consolidated and any additional sum actually paid in cash for improvements.

In reorganizations resulting from a forced sale or in any other manner, the amount of capitalization, including all stocks and other securities, shall be such as is authorized by the commission which in making its determinations shall not exceed the par value of the property involved.

147. *Capitalizations that are Not Permitted.*—The commissions do not have power to authorize the capitalization of any franchise to be a corporation, or to authorize the capitalization of any franchise or the right to own, operate, or enjoy any franchise whatsoever in excess of the amount (exclusive of any tax or annual charge) actually paid to the state, or a political subdivision thereof, as the consideration for the grant of such franchise or right.

Authorization cannot be given by the commission for the capitalization of any contract for consolidation, merger, or lease, or the issuance of any bonds or other evidences of indebtedness against or as a lien upon any contract for consolidation, merger or lease.

148. *Stock Dividends and Commission Action.*—The state utility laws usually contain a provision regarding stock dividends to this effect:

"No utility shall declare any stock, bond or scrip dividend or divide the proceeds of the sale of its own or any stock, bonds or scrips among its stockholders without the consent of the commission."

In a recent order of the Maine Public Utilities Commission, a precedent was set in regard to a stock dividend as a division of surplus in an application of an electric light company. In its order the commission said:

The rates have at all times been reasonable compared with those charged by such utilities in other communities, and no complaints have reached the commission—none exist so far as the commission has learned. The success of the company in building up a surplus of such comparative proportions appears to be explained by the fact that it did a profitable business from the start and has never paid any dividends to stockholders nor salaries to officers.

It now wishes to divide these earnings in the form of a stock dividend to the face value of its original authorized capitalization. We can see no objection to this so far as the public is concerned. It will not mean the withdrawal of any assets from the corporation, and the stock will still represent in money actually in the plant, more than its par value. It will not be "watered stock."

If neither the public nor the security holders will suffer in any way from the contemplated action, whether it will be of any real benefit to the stockholders is a question with which they alone are concerned. It is, however, probable that there will be some substantial advantage in case of future extensions requiring additional capital, because new stock can be sold at nearer par without injustice to present stockholders, and would thus be more attractive to the less experienced investor. That such a contingency is not unlikely, is shown by recent action of the stockholders in voting to increase the authorized capital to $20,000, "to be sold as funds may be required for the extension and improvement of its lines."

There appears, then, to be no reason why the prayer of the petitioner should not be granted if there is legal authority for it.

149. *State Does Not Guarantee Securities Issued With Approval of Public Utility Commission.*—Although the state confers regulatory authority over public utilities in the matter of finances, it does not hold itself liable for any loss incurred through the exercise of this regulatory authority. The state is protected through a section of the utility law which, in effect, states:

"No provision of this act and no deed or act done or performed under or in connection therewith, shall be held or construed to obligate the state to pay or guarantee in any manner whatsoever, any stock or stock certificate, or bond, note or other evidence of indebtedness authorized, issued or executed under the provisions of this act."

In regard to the liability of the state, a decision of the Massachusetts Public Service Commission held:

"That as the stocks and bonds issued by the company had been approved by the board of railroad commissioners as 'reasonably requisite' or 'reasonably necessary' for lawful corporate purposes and as the purchase by the Bluehill Street Railway of the Milton Street Railway Co. had also been approved, these approvals must be regarded as conclusive evidence, so far as the commonwealth and the commission are concerned, that the stocks and bonds so issued represented legitimate investment, not excessive for the purpose, and as strongly presumptive evidence that the investment was prudently made.

It does not follow necessarily that the company is fairly entitled to earnings which will enable it to pay dividends upon its stock or, indeed, interest upon its bonds. The commonwealth has not guaranteed these securities nor undertaken to protect stockholders or creditors against the consequences of mismanagement. If the company has wastefully or imprudently expended corporate funds obtained from other sources or has in any way been improperly managed, and if such mismanagement is the cause of a failure to earn dividends or interest, the company is the author of its own misfortune.

Particularly must this be borne in mind in the consideration of floating debt and those evidences of indebtedness payable at periods of 12 months or less from the date thereof, and for the issue of which the approval of the commission is unnecessary."

150. *Why Commission Approval of Securities is Necessary.* The utility laws of the various states differ in particulars, but the requirements which have been discussed, indicate the general scope of authority of the commissions in regard to utility financing. Issues of securities—stocks and bonds—are void in all states having commission regulation of securities, unless issued with the approval of the commissions. There are, of course, exceptions where notes or bonds run less than a year, as has been pointed out. Where all legal requirements are met the commissions cannot refuse to grant approval for the financing plans of a utility.

Through the influence of public utility commissions in keeping the activities of utility companies within the law, the public confidence in the securities issued with approval of state commissions has been increased and correspondingly their marketability.

(*Conclusion of Part IV, Telephone Finance.*)

Quiz Questions on This Installment.

143. Outline the powers of utility commissions in obtaining information and data to enable them to arrive at a decision as to whether a proposed issue of securities complies with the requirements of the public utility laws?

144. State some of the considerations influencing a commission in arriving at a decision regarding security issues. What price stipulations are made by commissions regarding bonds and stock?

145. What is the authority of a commission in respect to insuring the enforcement of its orders as regards finances of a public utility?

146. What is the authority of a commission as regards the capitalization in a merger or reorganization of utilities?

147. State what may not be capitalized by public utilities.

148. What is the usual provision of state utility laws regarding dividends? Outline the reasoning of the Maine commission in authorizing a distribution of a surplus of an electric utility as a stock dividend.

149. Does the state assume any liability for any loss resulting from its supervision of public utility financing? What points are emphasized by the Massachusetts commission in a decision which considers the state's reponsibility?

150. Can securities be legally issued by public utilities in states where supervision of utility financing is in effect, without permission of the utilities commission? What may be stated as result of state supervision of public utility financing?

The Last of Series of Ohio District Telephone Meetings

Meetings Held Last Week Under Auspices of Ohio Independent Telephone Association Productive of Much Good—Conferences on Service and Transmission Developed Many Points Beneficial to Those in Attendance—Reports of the Various Meetings

The second series of district meetings of the Ohio Independent Telephone Association began at Youngstown, May 23, at the Ohio Hotel. The district includes nine counties in Northeastern Ohio and there was a large representation of managers, officers, and stockholders in attendance.

W. B. Greggson, of New Philadelphia, vice-president of the district, presided and C. H. Swift, of Alliance, was secretary. The city of Youngstown sent James H. Nutt, safety director, to welcome the delegates and turn over to them the keys of the city. Youngstown now has a population of 110,000 people and is growing rapidly. Mr. Nutt spoke of the splendid relation existing between Manager George G. King and the city and public generally.

Frank L. Beam, president of the state association, made a report of the growth of business in Ohio since the Independent telephone association was formed 21 years ago. He deprecated the idea of a federal-owned telephone system on the ground that in Ohio alone more than $75,000,000 would be wiped from the tax duplicate so far as telephone property is concerned, if government ownership should be brought about. Statistics of the district showed large and steady gains in the Independent telephones.

C. Y. McVey, president of the United States Independent Telephone Association, who was visiting in Youngstown, his boyhood home, attended the convention. Eighteen years before, to a day, Mr. McVey entered the business, his first job being with the old Youngstown Telephone Co. He urged the delegates to patronize Independent manufacturers as a matter of self preservation.

Rollo R. Stevens addressed the convention on "Cultivation of the Get-Together Spirit," urging the companies to keep close to the job, to one another, and the public generally.

G. R. Johnston took charge of the meeting in the afternoon and led a discussion on transmission and service. Mr. Johnston was aided by Roy Owens, J. A. Russell and J. Edwin Myers representing various Independent manufacturers. The matter presented led to spirited discussion on the part of all the delegates and many useful points were brought out.

George G. King told of the recent installation of the automatic in Youngstown and of the remarkable gains that had been made in telephones and in long distance calls. From February 1 to May 23 a net gain in subscribers of more than 2,000 has been made and the toll business of the Youngstown exchange has grown more than 71 per cent.

Addresses were made by C. J. Queen of Akron; Dellwyn Stratton, Winona; J. C. Boush, Columbus; F. J. Shevlin, Butler, Pa.; D. J. Raley, Salem; H. J. Beatty, Ravenna; and Washington Hyde, Warren. W. B. Greggson, New Philadelphia, and C. H. Swift, Alliance, were reelected vice-president and secretary respectively, and the following were named as county committeemen:

James McBain and F. F. Thomas, Carroll and Jefferson counties; D. J. Raley and D. Stratton, Columbiana county; J. F. Smith, Harrison county; G. G. King and P. Robinson, Mahoning county; H. I. Beatty and B. J. Seegar, Portage county; Frank Robb and E. A. Walker, Tuscarawas county; A. Graham and C. E. Smith, Stark county; and C. J. Queen and W. C. Wood, Summit county.

At the close of the meeting, the delegates visited the new exchanges of the Ohio State Telephone Co. in Youngstown.

The Meeting at Zanesville.

At one o'clock on Wednesday, May 24, the third district held its meeting at Zanesville. The session was held in the rooms of the Zanesville Chamber of Commerce and was marked by a large attendance and lively interest from the fall of the gavel to the close.

J. B. Rhodes, vice-president of the district, presided and in opening the convention he told of the progress that had been made in his city and in his county. He was of the opinion that the recent history of the growth of his exchange was unparalleled in the country when local conditions were had in mind. Since June 13 of last year more than 4,200 applications for service have been taken and a net gain in the city of approximately 3,300 has been made. Independent telephony in the county is steadily growing and the toll business has increased approximately 62 per cent. during the period mentioned. Mr. Rhodes stated that the exchange was literally bursting its bands and that additions and improvements to the building, aggregating $10,000, were in progress.

Rollo R. Stevens followed, reviewing the sales and advertising methods used in the Zanesville campaign. He pointed out that the local force is now stepping more lively than it has since last October and no one could foretell the ultimate limit of the business that might be secured. More than 1,500 new subscribers, who never had telephone service, have been found in a territory hitherto thought well developed, indicating that telephone companies still have a great field for development in their respective areas.

President Frank L. Beam presented a statistical report of the state and outlined the need for co-operation and close work on the part of the Independent men in connection with the coming session of the state legislature, it developing that an attack would be made upon the public utility act with respect to its present certificate of necessity and convenience.

Representatives of Independent telephone manufacturers presented many useful hints as to ways in which transmission and service might be improved. Discussion was led by G. R. Johnston, who took the meeting in charge at this point.

In the call of the roll of counties, Wm. Miley of Pleasant City, Guernsey county, presented a situation of mutual competition which made a very interesting subject for the balance of the meeting. Delegates who took part in the meeting were as follows:

C. J. Pollock and S. C. Herdman, New Concord; B. M. Critchfield, E. O. Arnold, Lester H. Drye and F. J. VanVoorhees, Mt. Vernon; E. L. Jones, Glouster; W. E. Clark, Amesville; W. H. Penrose, Pennsville; M. T. Speaks, Junction City; Frank Ford, Waterford; C. L. Jones, Athens; E. M. Hunt, Quaker City; and S. B. Settles, Crooksville.

The Chillicothe Meeting on May 25.

Thirty-five accredited members of District No. 4 were present Thursday morning, May 25, at the opening of the district meeting held at the Warner House, Chillicothe.

H. P. Folsom, vice-president of the district, and H. M. Elliott, secretary, filled the respective offices. "Judge" Folsom, in his opening address, recounted the early history of Independent telephony in Ohio and pointed out the many difficulties the movement had to face during its early construction and development period. He placed particular emphasis on the credit which Independent telephone companies throughout the state had secured, which was entirely lacking in the early days. Independent telephone companies now have recognized standing with banks, trust companies and investors generally.

"The Benefits of Association and Co-operation" were presented to the meeting by Rollo R. Stevens and the necessity of organization was urged in view of the legislation that would be proposed this next winter affecting all telephone companies.

President Frank L. Beam spoke of recent agitation by certain organizations in the state for government ownership, and showed how the state government is now practically supported by taxes paid into the state by various utilities. Telephone companies, he said, are the fourth largest taxpayers in the state. With government ownership, the support of the state and county governments would have to be borne by real estate owners and the burden would fall heavily upon the farmers.

Luncheon was served at noon at the Warner House, the delegates and visitors being guests of the Home Telephone Co., of Chillicothe, represented by H. M. Elliott, manager, and Chas. D. Duncan, secretary.

The afternoon session was opened with an address from Jas. A. Cahill, mayor of Chillicothe, who paid a glowing tribute to the heroism and hard work of officials and employes of the Home Telephone Co. at the time of the disastrous flood in 1913.

The balance of the afternoon was employed in short talks upon the use and care of dry cells; the care of central office equipment; and the prevention of troubles in both central office and outside equipment by S. S. Wilson of the National Carbon Co., J. A. Russell, American Electric Co., J. Edwin Myers, Cracraft, Leich Electric Co., and Roy Owens, Automatic Electric Co.

G. R. Johnston, who had charge of the meeting during the discussion of these practical subjects, offered hints on economies in operation. E. B. Alspach, of the auditing department of the Ohio State Telephone Co., explained the accounting required by the Interstate Commerce Commission and offered the assistance of his department to the member companies in the preparation of their reports.

Among those attending were:

Harvey M. Allen, Portsmouth; C. L. Jones, Athens; C. H. Doan, Portsmouth; F. S. Spargur, Rainsboro; H. M. Elliott, Chillicothe; F. D. Rellkey, Rainsboro; C. D. Duncan, Chillicothe; A. W. Paffenbarger, McArthur; S. E. G. Pedigo, New Marshfield; J. C. Mason, Rainsboro; H. P. Folsom, Circleville; Fred Norman, Hallsville; Isaac P. Tucker, New Marshfield; C. W. Kugelman, Portsmouth; and J. M. Browne, Circleville.

Committeemen chosen were: W. D. Tremper and H. M. Allen, Scioto county; Col. Marting, Lawrence county; E. Humphreys, Pike county; Chas. Condon, Adams county; W. H. Elliott and C. D. Duncan, Ross county; H. P. Folsom and J. M. Browne, Pickaway county; Oscar Orr, Fayette county; G. P. Thorpe and J. Fisher, Clinton county; Fay Baldwin and J. C. Mason, Highland county; and A. W. Puffenbarger and C. A. Chapman, Vinton county.

Final Meeting at Columbus.

When District No. 9 was called to order by Vice-President G. R. Johnston at the Hartman Hotel, Columbus, on Friday, May 26, the audience of delegates and visitors looked like a state convention, so large was the attendance.

The address of welcome was made by A. A. Seymour, former president of the Columbus Chamber of Commerce, who chose for his subject, "The Spirit of Business." Mr. Seymour's address was a masterly one and struck the keynote for the day. Response was made by Rollo R. Stevens who noted the culmination of the inspiration of the eight meetings and remarked the co-operation apparent in the Ohio association.

President Frank L. Beam followed, outlining the work during the past year of the telephone association and the work ahead, giving the statistics of the growth of the district and in the state.

A roll call of the counties was had and prosperity was everywhere reported, both growth in stations and growth in tolls.

At this point F. E. Wesley, treasurer of the state association, reported that there were more contributing members at this time in the state association, than there had ever been in its history. The association, he stated, would be well financed for the coming year, many new member companies pledging support upon the basis of telephones and circuit miles of toll line.

A spirited debate on the present requirements of the Interstate Commerce Commission in connection with reports was had and a resolution broader in character than those proposed at other meetings was presented and adopted.

S. G. McMeen, president of the Ohio State Telephone Co., told what had been accomplished by his company since its organization and definitely offered the member companies assistance in all departments of telephone operation. The first four months of this year showed that the company is making net gains in stations at the rate of 18,000 per annum and that very substantial gains are being made in tolls. The additions and improvements planned at the time of consolidation, have practically been completed and new financing for 1916 and 1917 is under consideration. Promises that were made at the time of consolidation as to the relation of the Ohio State Telephone Co. with other companies in the state have been

fulfilled and the Ohio State Telephone Co. is enjoying the prosperity that the other companies throughout the state are experiencing.

The visiting vice-presidents of other districts made short addresses and were followed by encouraging talks by Frank A. Davis and H. M. Daugherty. Mr. Davis explained at some length the progress of the work with the American Telephone & Telegraph Co. looking toward a connection with Bell toll lines to reach non-competitive points. Mr. Daugherty reviewed his association with the Independent telephone movement and Independent telephone men.

At this point the chairman announced that those who wished to make early trains might leave the convention, while those desiring to take part in the discussion of the subjects, "Transmission" and "Service," might remain. The presence of many practical telephone managers, wire chiefs, and plant superintendents, made this division of the convention very interesting, many of the delegates taking an active part. Among those who spoke were:

C. J. Johnson, Mt. Gilead, Ohio; W. H. Harding, Johnstown; C. O. Young, Delaware; Cal Liggett, Plain City; H. P. Folsom, Circleville; M. M. Herron and K. B. Close, Millersburg; H. M. Allen, Portsmouth; S. M. Goodrich and A. F. Hones, Athens; E. W. Breece, Mt. Vernon; N. E. Liggett, Marysville; C. L. Jones, Athens; A. V. Kennedy, Milford Center; J. A. Zeecks, Mt. Sterling; H. M. Elliott, Chillicothe; O. P. Lenox, Richwood.

W. B. Greggson, New Philadelphia; E. E. Mischler, So. Charleston; Harry Sotzen, Shelby; C. R. Leary, Millersburg; O. C. Nethers, Fredericktown; C. R. Appleton, Mt. Vernon; Wm. Hicks, Centerburg; A. J. Curren, Elyria; C. D. Gott, Wellington; B. M. Critchfield and F. J. Van Voorhies, Mt. Vernon; L. O. Baker, Sunbury; Chas. De Wald, Danville; J. H. Beattie, Norwalk; E. L. Jones, Glouster; J. W. Blamer, Mt. Vernon; W. E. Molar, Athens; H. H. Smith, Prospect; G. H. Carter, Delaware; W. M. Heseltine, Delaware; C. E. Thompson, Bremen; and Howard Swartz, Ashland.

Transmission and Service Points Discussed.

The points mentioned in talks before district meetings of the Ohio Independent Telephone Association on and between May 16 and 26, in relation to improvements in service and transmission and economies in maintenance are briefly as follows:

Local and toll transmission has generally become and is expected to remain much better than formerly. To effect improvement on many plants, careful attention and application of knowledge already possessed by managers and others is more needed than special technical knowledge.

Plants examined critically by visitors frequently disclose many points of imperfection, readily removable, that are overlooked by those who keep their eyes too close to the job. One exchange troubleman was observed busy loafing, the statement being made there was no trouble and, as he was working by the month, he was free to use his unoccupied time in his own way. A visit was made to the nearest cable box. On that pole were found no soldered connections, two fuses replaced with wire, and the fuses generally dirty. The manager was led to see that the clearing up of all boxes in otherwise idle time would greatly improve the transmission, and in the aggregate give the troubleman more hours to himself in the course of the year.

The superintendent of an extensive county system prepared to put on an extra man to replace missing and broken insulators. Instead, however, he issued instructions that each of five men should put on two good insulators every good working day. In the course of three months, the work was all done without appreciable extra expense.

In an exchange of five information operators there was observed a very large number of calls for time. In order to get the time, each operator had to look over her shoulder. The provision of position clocks permitted a reduction of from four to five operators.

The transmission is sometimes set back by the use of 200-ohm clearing-out drops. It is said that these ought to be at least 1,000 ohms.

Special attention to batteries, transmitters, and all connections of pay stations and particularly good toll users was urged.

Instances were cited of toll connections made quite poor by the accumulation of minor defects—no one of which alone would greatly injure the service—such, as in one place, weak batteries; another, a poor cord or poor fit of plug in jack; another, an unsoldered joint, and so on.

Among economies in the use of dry batteries at the present high prices, are dating of batteries put in and the testing of all taken out to see whether the manufacturer has given full measure. On country lines it is well to renew all which might not last through the winter or the period of bad roads, and re-issue those taken out before serving their full life for telephones near the exchange or for pole changers or other exchange work. It is said that in some places practically worn-out batteries have been placed in a sal ammoniac solution, say in a fruit jar, until the zinc is fully exhausted. On the present market, batteries have a junk value.

The junk value of many items not ordinarily salable were cited, in connection with a government bulletin as to the saving of paper and rags. Companies have been known to save the cost of a paper baler in a comparatively short time.

Many ill effects from leaving the switchboard key shelves unlocked have been noted. Operators make the space below the shelf the receptacle of many articles, including those of metal, that sometimes make undesirable contacts. The frequent opening and closing of the shelf tends to loosen the cable and contacts.

Keys and other parts are frequently injured from spilling water for drinking or for holding flowers, and from dropping of crumbs and other parts of lunches in the board. In some cases the equipment is rapidly injured by grease, acids, or carbonated water of ice cream soda mixtures.

Apparently through ignorance of their inability to order parts separately, many places accumulate parts not needed, as by ordering receiver caps and shells, extension boxes and ringers, desk stands and boxes complete, plugs and cords as a unit, and so on.

Failure to obtain satisfactory equipment through the system of buying the cheapest was mentioned.

A manager of a small exchange commented upon his ability to get for nothing, cords of sufficient length for his own purpose after they had been cut back to the limit for a larger exchange.

Desk set cords may be purchased which have been treated so as to make them moistureproof. Cords not thus treated at the factory, may be satisfactorily treated by running them through a mixture of equal parts, by weight, of beeswax and vaseline. This may hurt the appearance a little but it reduces fraying and prolongs the life.

The saving by the mailing of mouthpieces to replace those reported broken, may be considerable.

Many instances were cited of lack of instructions as to care and simple repair of equipment on the part of operators or repairmen around small exchanges; of lack of instructions and care of emergency equipment, such as first-aid boxes, medicine cabinets, fire extinguishers; and of lack of instructions as to dealing with high tension crosses or lightning effects.

Emphasis was laid upon the very numerous cases of temporary work allowed to remain in a temporary condition. Temporary work was referred to as the "curse of the telephone plant."

Language almost as strong was applied to experimental work undertaken without knowledge or authority of those responsible for the service, and abandoned without any record of change in the circuits or equipment.

Instances were cited of the assistance given by subscribers, particularly farmers, in making tests, changing batteries, inserting fuses, etc. In one case a ground connection was restored unexpectedly by one who threw back into a well a brick to which the ground wire was attached.

The value of regular inspections of all switchboard parts, distributing frame connections, cable boxes, and other parts where trouble is frequently found, was emphasized. Also was emphasized the value of getting the outside plant in as good condition as practicable before the winter season, by having every man take care of all the little defects that might come before his eyes or might be found by searching during his every-day work.

Cases were cited of the ordering of new switchboards or other apparatus through the mistaken idea that the old board could not be profitably repaired or enlarged, particularly in cases where the original manufacturer had gone out of business or had discontinued a particular type of board.

Attention was called to the fact that, for the most part, magneto switchboards are of the same general type and that advice concerning them can be given by the different manufacturers.

Attention was also called to many improvements in the switchboards and other apparatus which may now be had, and the suggestion is made that inquiries be directed to traveling salesmen as to such improvements, and also as to other matters in relation to the best and most economical operation and maintenance of apparatus. These salesmen have a great deal more information than they are in the habit of volunteering.

Much was said as to the great value of the exchange of ideas, visits back and forth, examinations of one another's plants and methods, by managers and their workers, either in connection with nearby plants or plants of like size or kinds of equipment. There may be a certain backwardness in getting started or in speaking plainly, but after getting into the matter and finding plain talk in good faith is helpful, the benefits may be made very great.

Convention of Southern States Independent Association

Ninth Annual Meeting of Association Held at Knoxville, Tenn., Last Week With Large Attendance—Membership Doubled in Last Year—Addresses on Varied Topics by Prominent Men—Resolutions Adopted Condemning Bell Practices—Other Proceedings

The Southern States Independent Telephone Association opened its ninth annual convention at 10 a. m. Tuesday morning, May 23, in the Board of Commerce Building, Knoxville, Tenn., with over 200 delegates and visitors in attendance. Vice-President S. M. Heller, of Louisville, Ky., was in the chair, owing to the resignation of Albert Parlett, of Bristol, Tenn.-Va., former president.

The convention was welcomed to Knoxville in a very appropriate talk by T. Ashbury Wright, president of the Board of Commerce. The response in behalf of the association was made by W. H. Bryant, of Mobile, Ala.

O. F. Cassaday, of Chicago, then presented a paper on "Transmission Benefits," after which E. B. Fisher, chairman of the board of directors of the United States Independent Telephone Association gave a very interesting talk on "Telephony—Past, Present and Future." Mr. Fisher was very optimistic as to the future of Independent telephony.

The report of the secretary showed that the membership of the Southern States association had doubled during the past year and that the spirit of Independent telephony is growing. Secretary W. N. McAnge, Jr., being ill at his home in Virginia, was unable to be present. His report was read by Assistant Secretary, A. U. Meadows, Corinth, Miss.

The afternoon session of May 23 was opened by W. S. Vivian, of Chicago, secretary-treasurer of the United States Independent Telephone Association. Mr. Vivian's talk was along "Constructive Lines," in his well known and pleasing manner. His remarks were well received by the delegates present and everyone was very much impressed with the work of the United States Independent Telephone Association.

Following Mr. Vivian, W. H. Bryant, of Mobile, Ala., spoke on the "Hope of Independent Telephony." Mr. Bryant, who is also vice-president of the United States Independent Telephone Association, spoke very feelingly upon this subject and his address was also well received.

Arrangements having been made for a 13-mile trip into the country to the American Zinc Co.'s mine, the afternoon session was adjourned at 3 o'clock and the convention went en masse to the American Zinc company's mines in 30 automobiles. This was a wonderful trip to the beautiful scenic country around Knoxville, and the delegates and visitors were much impressed with this kindness on the part of Joe C. Duncan, of the Peoples Telephone & Telegraph Co., of Knoxville, Tenn.

The Wednesday morning session was opened with an address by Terry W. Allen, of Corinth, Miss., on "The Bell Telephone Company and the Government." Mr. Allen pointed out the deficiency of the Department of Justice in handling the anti-trust problem and the mistake in trying to compromise with trusts, as was the case when the anti-trusts suits on the Pacific coast were dismissed upon the filing of the Kingsbury commitment of December 19, 1913.

The Department of Justice put its own interpretation on this letter, Mr. Allen stated, and became so lenient with the American Telephone & Telegraph Co. that within two years after the filing of this commitment between two and three hundred mergers of Independent properties had taken place in the United States.

After calling the attention of the Department of Justice to the gross violations of Kingsbury commitment, without avail, the speaker communicated with the Interstate Commerce Commission, directing attention to the second paragraph of the letter which stated that "The question as to the course to be pursued in such cases will be submitted to your department and to the Interstate commission for such advice or directions, if any, as either may think proper to give."

In reply to Mr. Allen's letter the Interstate commission advised him that the A. T. & T. Co. has at no time submitted any matter to that commission for advice or directions, with reference to the acquisition of other telephone properties. At the time of that agreement, the letter went on to say, the Interstate commission had no anti-trust jurisdiction. Since then, however, its jurisdiction has been broadened by the passage of the Clayton anti-trust act on October 15, 1914. The commission suggested that Mr.

Allen furnish it with such evidence as in his opinion shows that section 7 of the Clayton act is being or has been violated, so that commission may be able to determine whether or not a complaint shall issue.

The speaker quoted and explained sections of the Clayton act as it related to telephone companies. After discussing at some length the monopolistic tendencies of the American Telephone & Telegraph Co., he concluded by pointing out the benefits of competition and urging competition upon an equitable basis.

Mr. Allen's address was followed by an interesting and pleasing talk on "Independent Telephony and the Postal Telegraph Cable Co.," by R. H. Polk, of Memphis, Tenn. Minor Corman, of Louisville, Ky., then spoke on the question of "Transmission" and delivered a very instructive address on this subject. This was followed by a talk on "Collection Efficiency," by B. A. Grant, of Corinth, Miss.

The election of officers took place immediately after lunch, resulting as follows: S. M. Heller, Louisville, Ky., president; J. C. Duncan, Knoxville, Tenn., vice-president, and W. N. McAnge, Jr., Corinth, Miss., secretary and treasurer.

The directors are as follows: Terry W. Allen, Jackson, Tenn.; W. H. Bryant, Mobile, Ala.; Chas. Chandler, Middlesboro, Ky.; J. M. McGregor, Memphis, Tenn., and Dr. W. L. Moor, Tallahassee, Fla.

Following the election of officers W. R. West, of Knoxville Tenn., gave a most interesting address on "Co-operative Telephone Systems." This was followed by J. M. McGregor, of Memphis, Tenn., who spoke on "Some Practices of the Western Electric Co." Shirley Lewis, of Jackson, Tenn., gave a short and interesting talk, as did also J. R. Dikes, of Knoxville, and M. P. Smith, of Knoxville.

Resolutions were pased commending the attitude of the telephone trade journals; protesting against the purchase of Western Electric apparatus by Independents and the methods used by the Western Electric Co., in its efforts to sell apparatus to Independent companies; calling attention of the Federal Trade Commission to the unfair methods used by the American Telephone & Telegraph Co.-Western Electric combination in soliciting business from Independents; endorsing the action of the United States Independent Telephone Association in passing a resolution directing the officers of the association to protest to the Department of Justice in the name of the national association, any apparent violation of the Kingsbury commitment later; and disproving any attempt to modify or postpone any section of the Clayton anti-trust act.

The convention closed Wednesday evening with a banquet at the Stratford Hotel.

The following exhibitors were present: Automatic Electrict Co., Chicago; Garford Mfg. Co., Elyria, Ohio; Kellogg Switchboard & Supply Co., Chicago; Electric Supply Co., Memphis, Tenn.; Stromberg-Carlson Telephone Mfg. Co., Rochester, N. Y.; Sumter Telephone Supply Co., Atlanta, Ga.; American Electric Co., Chicago; Frank B. Cook Co., Chicago; and Chicago Telephone Co., Elkhart, Ind.

The Convention of the Southern States Independent Telephone Association at Knoxville, Tenn., Was Largely Attended.

Novel Use of Telephone in Window Display.

The two local telephone companies at Louisville, Ky., obtained some excellent advertising, and at the same time aided the Louisville Gas & Electric Co., one of the properties of H. M. Byllesby & Co., to win the prize cup of the Louisville Advertisers' Club, for the most attractive window display during the week of May 22.

The local concern therefore used a great deal of time and care in preparing a window, which was located on Fourth avenue, between Walnut and Chestnut, in a vacant building, one square from the store. In order to get direct communication with people who after looking at the window might be interested, the company made arrangements with the Louisville Home Telephone Co. to install a telephone on the front of the building directly alongside the window.

The Cumberland Telephone & Telegraph Co. later became active and as a result, a second telephone was installed on the opposite side of the window—five days later. Telephone directories were placed on each telephone, and cards displayed to the effect that any one interested in the display and likewise interested in having their own homes wired might call up the company. That many of the people viewed the window and then called up over these telephones is shown by the records of the gas and electric company which reported a number of calls, and several sales that, without the aid of the telephones, might not have been made.

The display itself reproduced a city block, the homes being lighted, and ornamental posts carrying electric lights at the corners. A banner at the rear of the window called attention to the fact that 8,000 homes in Louisville have been wired and equipped for electric lights in the past two years. The telephone service was arranged so that day and night connections might be made with the office of the electric company.

It is interesting to note that more people showed interest in the telephone arrangement than anything else, unless probably a small, electrically propelled street car, lighted up and bearing the sign "Toonerville Trolley," taken from the cartoons of Fontaine Fox, the noted cartoonist, who was formerly a Louisville man.

"Telephony's" Home Study Course for Telephone Men

A Complete Presentation of the Principles Underlying Modern Telephony in All Its Branches—Arranged Systematically So That Regular Reading and Faithful Study Will Qualify Ambitious Men for Higher Positions—Prepared Under Supervision of Stanley R. Edwards—This Section Written by Jay G. Mitchell

Quiz Questions on the Preceding Installment.

390. What condition must be made uniform as regards transmission current voltage? What important fact should be observed in connection with the repeating coil type of common battery cord circuit?

391. Outline a mechanical analogy of the condenser balanced-impedance cord circuit and indicate the points of similarity.

CHAPTER XVIII. Circuit Analysis.

392. *Methods of circuit analysis.*—There are two methods of circuit analysis, neither one of which is entirely complete without the other. The most reliable and satisfactory method, and the one usually employed when the results sought are of great importance, is to arrange an actual physical operation of the circuit under consideration, using the exact type of apparatus involved and subjecting the model to all conditions to which it would be subject in actual use. In patent litigation this method has been almost universally employed and it is practically the only method that insures the consideration of every pertinent detail. Ordinarily, however, it is possible to study the operation of any circuit from properly prepared drawings.

393. *Principles and conditions for circuit analysis.*—There are certain basic principles of operation that should be kept in mind, and all special conditions should be clearly indicated on the drawing. Such conditions include, for instance, relay springs arranged to make one contact before they break another; key contact springs intended to operate in an unusual way; wires carrying currents of unusual character such as ringing current of various frequencies; and switch-driving pulsating currents and high-frequency currents such as the busy tone in automatic telephone equipment.

When the special and unusual features of operation are plainly indicated upon the circuit drawing, it is perfectly feasible for the skilled telephone man to make an analysis of the circuit and to thoroughly understand its operation. In more complicated circuits, or in circuits which are newly designed and have never been in operation, it is not safe to base any decision upon a study of the drawings alone. In such cases the study of the drawings should be supplemented by an equally careful and searching study of the operation of a model embodying equipment such as it is proposed to use in the finished arrangement.

394. *Laboratory and service conditions to be considered.*—Care should be exercised that a sufficient number of all related circuits are provided in the model to insure the reproduction of all conditions likely to be encountered in commercial service. This is especially true in the case of automatic and semi-automatic circuit development. Circuits have been developed many times which appeared to be entirely satisfactory when tried out in limited numbers or with a limited number of the related circuits with which they were designed to operate, but they were absolutely inoperative when subjected later to conditions

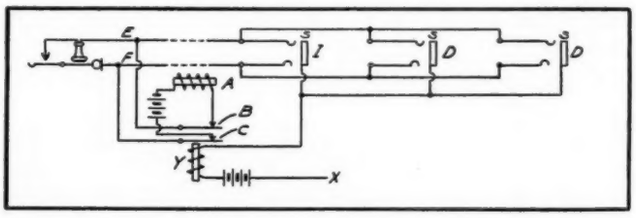


Fig. 136. Multiple Line Equipment with Cut-Off Relay.

produced by service in commercial plants. Such a condition is due of course, to the nature of telephone traffic in the aggregate as distinguished from each isolated component call.

395. *Definite relations which must be considered.*—There are certain definite relations between all the different calls being handled in any exchange at any given time which must be provided for in the arrangement of the equipment. A very obvious illustration of this fact is found in the necessity for guarding a busy line from intrusion.

It is plain that the maintenance of a satisfactory guard on such a line does not contribute anything to the *making of the connection.* Were a circuit designed without any busy test it could be used to connect two lines with perfect success. However, when incorporated in an exchange, it would be very soon found to be inadequate, owing to the inter-relation between all the individual calls. For this reason it is necessary to subject any newly-designed circuit to test under actual operating conditions as they would be encountered in commercial service.

396. *First step in examination of a circuit.*—Since it is a common battery line circuit which is being considered, certainly the first step in its examination consists in tracing out to the end, *all* the wires leading from the non-grounded terminal of the common battery. This is necessary in order to make sure that, under normal conditions, neither of the relays is energized and no current is flowing through the lamp. It is safe to place the tracing of these circuits first, because if they are not arranged to prevent any flow of battery current under normal conditions, the arrangement cannot be utilized.

Taking each wire in turn (Figs. 136 and 138) as it leaves the non-grounded terminal of the battery and following it out, proves that the battery circuit through the line lamp is incomplete until the line relay, *A*, has operated its armature. The battery circuit through the line relay, *A*, is also incomplete until the two sides of the line, *K* and *L*, (Fig. 138) are connected

together either by the removal of the receiver or by some other method that will justify the operation of the line relay.

It is plain, therefore, that in the illustration, the conditions are satisfactory when the line is in its normal or idle state. A mental note should be made that both sides of the line relay circuit (Fig. 138) are opened at contacts 4 and 5 when later the cut-off relay, *B*, is operated.

397. *Importance in circuit analysis of following out each wire to its termination.*—It is worthy of note at this time that *all* the wires leading from the non-grounded terminal of the battery in the drawing, have been followed out. This is a point of great practical importance in circuit analysis. Each wire leaving any given common point, in a drawing, should be followed out to its final termination. In the case of a relay, each spring should be checked off as the wire attached to it is traced through and found to be satisfactory. Each key spring, each jack spring, and each terminal clip should be carefully checked off in rotation. Otherwise, an important or troublesome wire is apt to be overlooked entirely and its effect upon the operation of the equipment missed altogether. The writer has found it helpful to always start at the top spring of a relay, or jack, and the left-hand spring of a key.

398. *What parts of circuit need not be traced.*—It is not necessary to follow out the wires attached for the connection of the various elements of the circuit, to the grounded terminal of the battery. Current can only flow from points having a potential difference with this terminal and therefore current will appear only when such points are connected with the non-grounded terminal of the battery. This may be—under normal conditions—through lamps, relays or signals, neglecting accidental contacts which are properly classed as apparatus trouble to be cleared in the least possible time.

In Fig. 138 it is clear that under normal conditions—that is when the subscriber's receiver is on the hook—the line circuit apparatus will be unaffected by any current flow but will be in condition to respond instantly whenever the line circuit is closed by a connection between its two sides, *K* and *L*.

399. *Importance of analyzing circuits methodically.*—The importance, to the telephone man, of making accurate and dependable analyses of such circuits as may be encountered cannot be overstated. The telephone man should not only thoroughly analyze all the circuits involved in the operation of the equipment under his charge, but it is also very good practice to become as familiar as possible with the details of operation and methods used in other types of equipment. Devices and

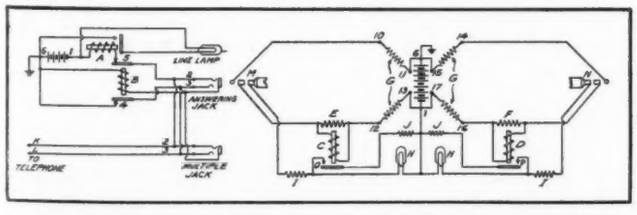


Fig. 138. Three-Wire Repeating Coil Battery Feed Cord Circuit.

arrangements are often used that lend themselves readily to other purposes, and familiarity with such arrangements is only to be obtained by careful study of the conditions under which they are used.

400. *First consideration in an analysis of a circuit.*—The illustration brings out the most logical point of attack when any circuit is to be studied. Assuming that all the conditions are normal, and that no demand is being made upon the circuit for service, it should be definitely established that there is no operating cause in those parts of the circuit that must be maintained in a receptive "ready to serve" condition.

In Fig. 138, each wire in the line circuit, leading from the non-grounded battery terminal, has been traced to a point at which a definite interruption is present under all *normal* conditions. It may be assumed, therefore, that the line circuit under consideration will always respond, through the line relay, *A*, to the closing of the circuit between the wires, *K* and *L*. This is assured by the fact that the arrangement shown does not permit *any* current flow through the line relay, *A*, or the line lamp, the possible paths for such an operating current having *all* been *traced*.

It may be said, then, that the first consideration is to make sure the arrangement cannot operate until it should—that operating current cannot flow through the operating circuits when the equipment is idle and waiting for a demand for service.

401. *The second step in circuit analysis.*—It is obvious that the next step in the consideration of any circuit arrangement is based upon the assumption that the condition calling for its operation is in existence. In the illustration, this means a closing of the circuit between the two sides of the telephone line such as would follow the removal of the calling subscriber's receiver from the hook in the effort to secure the operator's attention.

With this mental adjustment for the existing conditions of the circuit, each of the wires should again be traced, starting as before from the non-grounded terminal of the common battery. This procedure will show that the path for operating current through the winding of the line relay is now complete at the calling telephone. As a direct result of the removal of the receiver from the hook, therefore, the line relay, *A*, will operate its armature.

The continued flow of current out over the telephone circuit, will maintain the armature of the line relay in its operated position so long as the two sides of the circuit remain connected and in series with the line relay and common battery. By an examination of all the wires in the circuit drawing, it is once again established that, under such conditions, no other effect may be traced solely to the flow of current out over the telephone line. *(To be Continued.)*

Report of Marshfield (Wis.) Telephone Co.

The Marshfield Telephone Co., of Marshfield, Wis., in a report to the Wisconsin Railroad Commission gives its investment as $59,254; total revenues, $16,563 and expense $14,475, leaving a net income of only about $2,000. This is less than 5 per cent. on the investment.

The company has 31 miles of poles in use; six miles of cable and 868 miles of wire; and the investment for new equipment last year was $6,778. Seventeen people are employed at an annual cost of $8,957. There was an average of 154,442 local telephone calls per month last year and 3,700 long distance.

Beloit, Kan., to Have New Exchange Building.

Plans have been completed by the United Telephone Co., of Beloit, Kan., for the erection of a new exchange building at Beloit. It will cost between $12,000 and $15,000.

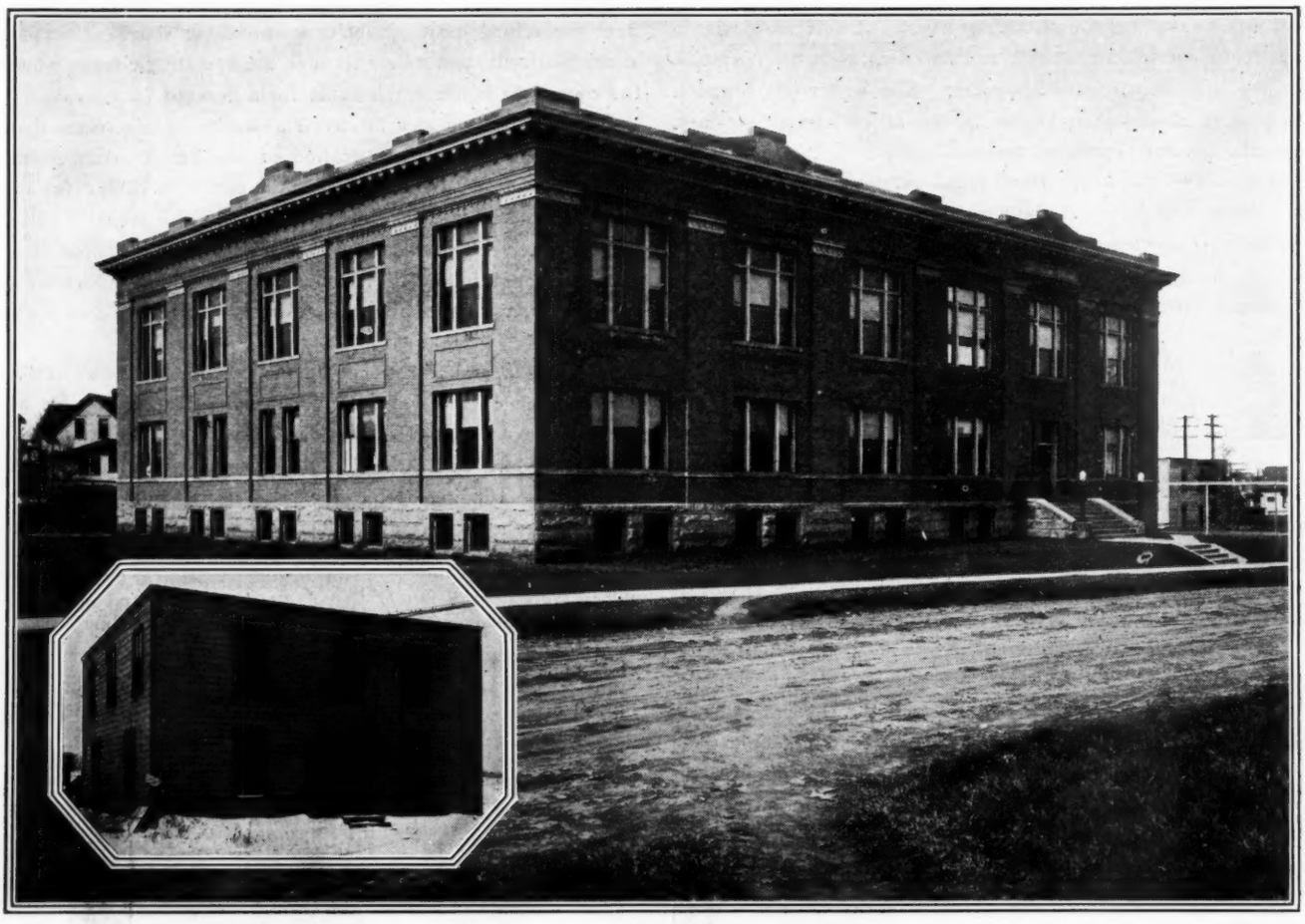
Automatic System Cut into Service in St. Paul, Minn.

New Automatic System of the Tri-State Telephone & Telegraph Co. in St. Paul, Cut Over at Midnight, May 27—Five Offices Serving Some 22,000 Subscribers Changed to Automatic in Forty-Five Minutes—Side-Lights on Cut-Over

The entire St. Paul (Minn.) exchange of the Tri-State Telephone & Telegraph Co. was cut over to automatic Sunday morning, May 28. The first actual beginning of the transformation occurred shortly after the noon hour on Saturday, May 27, when the trunks between all Tri-State exchanges were cut over.

General Superintendent R. L. Barry and his assistants were early on the job. Every possible angle which might develop trouble was given advance attention and arrangements were made for covering the city with all possible speed following the work of Saturday night. The city jumped to the task of actually cutting over. Without confusion and with no sign of nervousness or excitement on the part of the men so engaged, the five big offices were switched to automatic almost in the twinkling of an eye.

After the battery was thrown off the entire manual system located in the five offices, the men proceeded to cut the jumper wires connecting the subscribers' lines to the manual equipment. As soon as this was accomplished, the battery was placed on the automatic system, and men assigned to the duty of removing the toothpicks which up to the time of the cut over had held open



Executive Headquarters of Tri-State Company Where Midway Office is Located, Also First Exchange of Company.

was divided into districts and troublemen were stationed in every section in order to respond promptly to calls which required expert attention. The necessity of dispatching a special man to the location of trouble was, in many cases, avoided by advice supplied to the subscriber by the information operator. The system, however, was wonderfully complete and the company did not experience one-fourth the trouble calls anticipated.

An elaborate publicity and advertising campaign was systematically carried out during the two months previous to the cut over. Explicit information was given every subscriber regarding the method of operation—what to do and what not to do. At midnight hundreds of men the connection between the subscribers' lines and the automatic apparatus.

In the offices where new main frames have been installed, these toothpicks were placed in the protectors, but in the offices where the old main frame is to be retained, the toothpicks were inserted in the line switches. The process and result is practically identical in either case.

Upon the removal of the toothpicks from any particular line, the line was placed in full service, but where any fault developed, such as receiver off the hook or a short on the line, the toothpick was restored until the condition could be cleared.

Subscribers had been advised that the new system would

be at their service at dawn Sunday morning. This plan served to prevent the over-enthusiastic or curious subscriber from attempting to dial automatically before the cut over had been completed.

The work of installing automatic systems in the Twin Cities has been in progress for nearly a year and a half. The contract was signed in September, 1914, and the first shipment of automatic equipment reached St. Paul the following January. The work of installation began immediately. St. Paul, with five offices, was given the benefit of the first work and it was decided at that time to bend every effort towards completing the system in that city before any very serious attention was given the Minneapolis exchange.

The work in both cities, however, progressed satisfactorily from the very start. a little more rapidity in St. Paul marking the only difference. Today the St. Paul exchange is complete and the Minneapolis system will be cut over, barring unforeseen accidents, some time prior to October 1. The new exchange in Minneapolis, just completed, has cost, exclusive of equipment, approximately $146,000.

As was remarked before, the cut over in St. Paul involved five offices, which serve some 22,000 subscribers in St. Paul. Approximately 12,000 lines of central office equipment were cut over to automatic.

In connection with the installation of automatic equipment in St. Paul, the Tri-State company has carried out a quite extensive building campaign, including the enlargement of its Merriam Park building with a fireproof addition of approximately the size of the original structure, as shown in the accompanying illustration. This building houses the automatic central office equipment for the Midway office, together with the toll board for the entire St. Paul-Minneapolis area, and in addition the building contains the executive offices of the company. It is a strictly modern, fireproof building of brick and concrete construction with Bedford stone trim.

President Robinson and Associates Active in the Management of the St. Paul Exchange.

To house the "East" office a new building located one-half block from the old site has been constructed. This is 40 by 60 feet in dimensions, and at present is one and one-half stories in height, and is so constructed that another story can be added when needed. This building is absolutely fireproof of brick and concrete material, and is particularly attractive in design and harmonizes well with the residential region in which it is located.

The most interesting construction work conducted by the Tri-State company is that done at the "Dale" office, which was originally a one and one-half story building with a gable roof. Nineteen feet have been added to it along one side, a flat roof with a parapet has been put on, and except for that portion of the floor actually occupied by the manual switchboard, it is absolutely fireproof. This transformation was carried on while the operators continued to perform their regular duties, and without the least interruption in the service.

The oval insert in the accompanying illustration shows the first building to be constructed by the Tri-State company and was occupied from 1903 to 1906 as a toll exchange and by the auditor's office. This building is still standing and offers a striking contrast with the present structure, which is symbolic of the progress made by the company.

The operators in St. Paul, who, as a result of automatic installation, have been relieved of their positions at the switchboards, have all been placed in other positions. Not a single girl was forced to leave the employ of the Tri-State company. A number did leave, of course, but they did so because of personal reasons. Five operators, engaged to be married, remained at their posts until the cut over, postponing their marriages from time to time as the work of installation was delayed. Another, married, but did not resign. Many of the operators will go to new positions on toll boards. Others will become operators for private branch exchanges, while several expressed a desire to try their hand as members of the clerical and sales forces.

Until the automatic is cut over in Minneapolis, subscribers in that city desiring a St. Paul connection will continue to call the operator, as in the past. She will repeat the desired number to an operator at the Merriam Park (Midway) exchange and the latter will dial through the number, completing the call. On the reverse, St. Paul to Minneapolis calls, St. Paul subscribers will dial number "9" for a Minneapolis operator. The latter will then complete the call manually. With the completion of the automatic in both cities, inter-city calls will be dialed through direct the same as for a purely local call.

The Tri-State Telephone & Telegraph Co. was organized in 1903. Its initial field of operation was in the building and operating of toll lines radiating from the Twin Cities, where the Twin City Telephone Co., organized in 1901, was operating local offices serving 8,000 subscribers. For convenience in financing, and for economy in operating, these two companies were amalgamated in 1906.

From that time the growth of the company has been rapid and substantial. During the period of ten years from 1906 to 1916 the plant in service has increased from four and one-half million to nine million dollars. The stations directly served have jumped from 18,384 to 54,544 with close to 300,000 connected stations. The annual gross earnings have increased from $870,000 to $1,741,000 and there has been paid in dividends to stockholders $2,096,-187.

The St. Paul Tri-State organization and the automatic boys on the job were a tired, sleepy aggregation as dawn broke over beyond the Mississippi bluffs on Sunday morning. Most of them had worked continuously for 24 hours, but there was no complaint.

At noon Sunday, after thousands had tested their new automatic telephones, the system seemed to be working perfectly. Trouble calls were few and far between. Not one-quarter of the complaints expected, materialized. The users were wrong occasionally, the five-figure numbers bothering the unaccustomed during the first few trials.

Troublemen, located in 15 districts throughout the city spent a listless day. An occasional demand for service kept them from actually napping.

The first jumper was cut by J. M. Lockhart, of Pittsburgh, at 12:10. Immediately thereafter the electricians jumped to their task. Forty-five minutes later the cut over was practically complete.

In the big manual operating room, just across the corridor, the other side of the picture was presented. Where everything had been activity, lights flashing on the big operating board, girls sweetly asking "Number, please?" plugging in here, then there, disconnecting on the other side, the ending came like the passing of some dear personal friend. Lights faded, the flashes became less frequent, then ceased altogether.

The operators did not smile. Silence, subdued, almost reverent, filled the big room. The operators slipped quietly from their stools, glanced around at their neighbors to make sure they were doing the proper thing, then gathered in a little forlorn group about the supervisor's desk. The big, pulsating switchboard of only a moment before was no longer for them. So far as they were concerned, it was fit only for junk.

President G. W. Robinson, of the Tri-State company in a local interview concerning the new automatic installation in St. Paul said:

"It certainly is gratifying to be able to present so perfect a telephone system to the citizens of St. Paul, capitol city of the North Star state. The Tri-State company decided to adopt automatic only after a most thorough investigation. It is hardly necessary for me to state that we believe the automatic represents the final word in real telephone efficiency. The Tri-State company has invested heavily in automatic equipment, but the step was taken with eyes wide open and in the belief that results accomplished would adequately compensate.

The interest maintained by subscribers grew to fever heat as the day for the cut over approached and thousands made inquiries regarding the new system as the hour for actual operation approached. The problems encountered were numerous, many of them serious, but the technical staff surmounted every one and I am confident no other city in the country can boast a more up-to-date or a more serviceable telephone system than the one just installed by this company in St. Paul and in process of completion in Minneapolis."

The advertisements of a large number of St. Paul business firms in the Sunday newspapers of May 28 featured their new numbers on the automatic telephone which went into effect at daybreak Sunday morning. These advertisements all appeared in one section of the paper under the heading "New Numbers on the Automatic," attention being directed to the opposite page for instructions in dialing a number. The advertisement of the Tri-State company referred to, occupied nearly the entire page and told how to place a call on the new automatic telephone. Considerable space was devoted to the story of the cut over by the St. Paul newspapers of Sunday, May 28.

Telephone to Aid Golden Jubilee Celebration.

The Massachusetts Institute of Technology will celebrate its 50th anniversary at Boston on June 14, and by arrangement with the American Telephone & Telegraph Co., alumni of the institute gathered all over the United States will enjoy the addresses of distinguished speakers on the platform of Symphony Hall. In previous transcontinental telephone demonstrations the various groups interested have come to the telephone in some large city on the main trunk lines of the system, but in this anniversary celebration, transcontinental service will be carried to each group of alumni, wherever it may be located.

At least 35 cities will be linked by wire, including important points as far south as Atlanta and New Orleans, the principal cities of the Pacific coast, and the larger centers of the Middle West and Canadian border states, as well as New York, Philadelphia, Chicago and other metropolitan communities. The addresses of the speakers will thus be heard not only across the country but virtually all over the United States.

The program will begin with a message from President Maclaurin, and the guests on the platform will include Alexander Graham Bell, Thomas A. Edison, Orville Wright, President Theodore N. Vail and Vice-Presidents U. N. Bethell and N. C. Kingsbury of the American Telephone & Telegraph Co., President P. L. Spaulding of the New England Telephone & Telegraph Co., Thomas A. Watson, J. J. Carty, Prof. Charles R. Cross and Prof. M. I. Pupin. During the week the new buildings of the institute on the Charles River Esplanade in Cambridge will be dedicated.

A Message to Oklahoma Independent Telephone Men

Secretary of Oklahoma Independent Telephone Association Points Out Advantages of Membership in Association—Discussion of Toll Commissions and Routing of Toll Messages—Semi-Annual Meetings Proposed—Other Matters of Interest to Oklahoma Companies

By H. W. Hubenthal

We are very pleased to report that eleven new members have been taken in since our convention in March. It appears that telephone people are taking a lively interest in our new organization. Almost daily I have inquiries from some manager or owner of Independent telephone companies—not only by letter, but also over the telephone—as to the aims and objects of our association, and as to the qualifications of companies to become members.

REQUIREMENTS FOR MEMBERSHIP.

For the information of those who are interested or who would like to become members of our association, we have only one class of members, namely, active members. Active members must be bona fide operating or manufacturing telephone companies, independent of and not owned or controlled by the American Telephone & Telegraph Co., or any of its associated or allied companies, and in the event any such interests or control shall be acquired by the A. T. & T. Co. or any of its allied companies or any persons acting for them, directly or indirectly, such membership so affected shall cease.

Members should interview eligible neighboring companies with the object of enlisting them for the good of the cause. The yearly dues of the association are $2, and the association is in position to furnish any of the leading telephone magazines to its members at reduced rates, also to new members. The secretary will furnish particulars.

In our last issue of the association's bulletin, mention was made that the Grove Farmers rate case was pending in the supreme court. Since that time the commission remanded its decision and another hearing was had on the case May 9. In the new hearing we have made an even more favorable showing than in the previous hearing—that we are entitled to 50 cents per month per subscriber instead of 25 cents for farmer switching service. All companies will, no doubt, watch with interest the outcome of this case.

Numerous inquiries have been received by the secretary on the subject of toll commissions. The working up of data for something like 25 or 30 companies, and a number of other companies whose cases are now pending, has shown and fully satisfied the secretary that any company receiving less than 25 per cent. commission on an average on "in and out" toll business, is not receiving the full compensation for handling the toll business for other companies, and is simply sleeping on its rights. As it is not a difficult matter to make a proper showing that a company is entitled to this commission, I will only be too glad to furnish information as to ways and means, to members applying for it.

HEARING ON ROUTING OF TOLL MESSAGES.

On June 13 there will be a very important hearing before the Oklahoma Corporation Commission at Oklahoma City as to the right of companies owning toll lines to route messages over their own toll lines as initial lines in the transmission of messages through connections with other toll lines. That is, when a company owns a toll line in the direction of the delivering point of a message, the company should have the right to route the message as far as it can over its own lines and take a line haul in the revenue from the message. The complaint is in the case of the United Telephone Co. of Afton vs. the Pioneer Telephone & Telegraph Co. The Jennings Telephone Co. of Jennings, Okla., has a similar complaint on a division of line haul.

Already a precedent has been established in Oklahoma giving the exchange or company originating the call the right to route the business. This was done in the cases of the Comanche Telephone Co. and the Rush Springs Telephone Co. vs. the Pioneer Telephone & Telegraph Co.

All members and owners of toll lines and those contemplating building toll lines are urged to be present at this hearing. The date will also prove to be a very opportune time to have a directors' meeting, to be attended by as many of the members as possible, to discuss the following subjects:

First. The connection of and joint service between neighboring Independent toll lines with the object of eventually connecting all Independent companies throughout the state by means of Independent toll lines.

Second. To arrange for proper traffic regulations covering such service, and to discuss the advisability of enlisting the services of large wire companies to handle long haul business.

Third. Whether or not you now have a fair and equitable working arrangement, and if you are receiving a proper line haul, and full compensation for the handling of inter-company business.

It has been suggested by some of the members that meetings be held semi-annually. I believe this to be a good suggestion and would like to have an expression from all the members, first as to the advisability of holding these meetings, and further as to time or dates upon which they should be held. This will enable a suitable program to be arranged, and provisions made for representation by Independent manufacturers; also that the time of the meetings does not conflict with meetings of other associations.

Articles appearing in the leading telephone periodicals, leads me to believe it is to the best interests of the Independent companies to buy equipment only from Independent manufacturers. More will be said on this subject in later bulletins.

The opposition on the part of telephone companies in other states to public utility commissions is noted with surprise. We, of Oklahoma, speaking for those of the telephone companies having had experience with the corporation commission of this state, certainly are in favor of commissions. Of course conditions may be different elsewhere, but, in my opinion, in this state the public utilities commission or, as it is called, the Corporation Commission, has not only been of benefit to the public at large, but also to the telephone companies.

Members are again reminded to favor me with items of news publication in the bulletin, to reach me at Afton, Okla., not later than the 15th of each month.

Bravery of Telephone Operator at Ennis, Texas.

Through the presence of mind and heroism of Miss Lillian Smith, a telephone operator in the office of the Texas Telephone Co., in Ennis, Texas, a serious fire in the telephone office there was averted on the afternoon of May 17. A toll line wire dropped across an interurban trolley wire a few miles from Ennis, the high current setting the terminal rack on fire in the exchange. Miss Smith extinguished the fire and, at considerable risk to herself, disconnected the heavily charged wire. In acknowledgment of her bravery, promotion in salary and position has been given Miss Smith by her employers.

To Consolidate Plants at Moulton, Iowa.

The Farmers Mutual Telephone Co., of Moulton, Iowa, has purchased the Commercial Telephone Co. of that city for $7,000 and will consolidate the two exchanges.

Practical Subjects—Letters and Discussions

"Telephony's" Home Course for Telephone Men.
(Not meant for study.)
By Well Clay.

An archer loosed an arrow swift,
  Straight at the morning sun,
Then watched it strike the earth again,
  Its journey scarce begun.

A comrade took a lower mark,
  And though he passed it by,
It was the bolt which farther flew
  That was aimed at the morning sky.

So, dear friend, take this advice
  And never fail to try
To do your very level best;
  And let your aim be high—

Unless you get in a fight with a darkey, when it is said that the most expedient thing to do is is to kick him on the shins.

However, what I started out to say was that I have just returned from the post office where I deposited with the gentlemanly clerk, at a cost of 22 cents, two copies of the annual report of this company, addressed to the Department of Statistics of the Interstate Commerce Commission, at Washington, D. C. This report, which has been a pretty constant companion of every one about the office for several weeks, has not left sad hearts on its departure, and it is to be hoped that the answers to the questions therein will be satisfactory to the commission, if they ever read them.

I have heard it said by one who had reasons to be possessed of the knowledge, that it took the Interstate Commerce Commission 11 years to decide upon and determine just what information they would need in their business. And once they had settled in their own minds as to the nature of the statistics for which they wished, they graciously allowed telephone companies 11 weeks in which to secure the makings of this report. This goes to show that they admit, what every telephone man knows. that the men who manage the companies are smarter than the Interstate Commerce Commission.

This is borne out by facts. For who can point out any telephone man who, if left alone, would bother his head about how many messages locally passed through his exchange in a month? He might wonder, perhaps, but if he did he would simply guess at it, and like the intelligent archer above who let fly the first arrow, go beyond the mark. He might not come within a mile of his mark, but that signifies nothing—many present-day sportsmen have the failing when guessing at the weight of the fish they have hooked and which by some unaccountable reason got away. Besides, guessing at the number of messages gives one more latitude when making reports to subscribers and to operators at which time it is sometimes advisable to vary somewhat as to number.

Why didn't the Interstate Commerce Commission provide places for some really vital statistics, instead of merely setting aside places in which to set down figures which are dull matters anyhow and which one has difficulty in weaving into an interesting story?

Why didn't they require that we should tell the number of patrons reporting that they "never go near their telephones on rural lines except when they hear their own ring?" Why not tell the numbers of times where subscribers positively assert that no messages have been sent from their telephones on which there are long distance charges? Why not tell the exact number of people reporting that their batteries have been "in" all the way from two to four years, or ever since the telephone was installed, when as a matter of fact, they never run more than five months on any pair of batteries you have been able to get hold of?

The number of times "central" is asked, "Did you ring my party? I know they are at home," when it transpires afterwards that the party called was not at home—would be interesting. So, too, would the number of people who imagine that their batteries are weak because they cannot ring "central."

The Interstate Commerce Commission doesn't seem to care about the number of times patrons coming in to pay declare that they are paid up a month or more in advance of their credits on the books and who "jest know I have that there receipt at home 'cause I saw it only 'tother day." It is nothing in their busy lives to know that ninety-nine times out of a hundred the party is wrong.

I can see where state regulating bodies could be of considerable benefit to small telephone companies, after having received from them actual statistics regarding their plants, but what the Interstate Commerce Commission is figuring on doing with all the vast piles of reports which they will have to wade through—or if they don't read, will have to find storage room for—I cannot imagine. No wonder the government is making such strenuous efforts to have people conserve the supply of paper. It will all eventually be accumulated in the depositories for useless reports at Washington probably, where no one will be allowed to destroy or read the information thereon and then the clerks will lose their jobs.

If the government employes do, after strenuous efforts, succeed in swallowing this enormous meal of statistics, will they not—like the boa constrictor—be rendered torpid from its enormous load during the considerable length of time required for digestion?

It seems to me that reliable statistics regarding the average cost of cementing poles about the bottom and the benefits accruing therefrom; or the cost of depreciation in batteries from the pestiferous activities of the "rubberneck"; or the best manner of convincing rural subscribers that it is to their own immediate and particular interests to keep all trees trimmed which may come in contact with overhead wires or drops, would be of infinitely more importance to the business as a whole—and have a tendency to shape matters towards a reduction in the cost of telephone service to the patron—than will all of the multitudes of apparently irrelevant questions which the authorized reports now contain.

There is so little danger of the average telephone company being able to finance local plants to their hurt by over-capitalization that the tremendous energy and cost to ascertain the fact or prevent it, is not proportionate to the benefits received.

What the rural subscriber is interested in is, first, cost of service and then quality, rather than the reverse arrangement, and anything which will have a tendency to lower the cost to him of the service will get his immediate and earnest attention, if it is put to him in such a manner as to appear reasonable and convincing.

The ultimate cost of all that has been done so far, in the matter of state and national commissions, is bound to be added to the bill of the patron, and every act has had a tendency to add to the bill of expenses and practically none against that I have heard of.

The commissions are the friends, apparently, of the companies, inasmuch as results are bound to show that telephone service costs more than has been commonly supposed. The knowledge thus gained will be of great value to the stockholder in the end but a change should be had in the kind of statistics gleaned, from now on, if the telephone user is to realize aught of his dream of lower prices when "the people got supervision and control of the public utilities."

It is easier to substantiate than to reconcile, sometimes.

Telephonometer for Measuring Transmission Efficiency.

In a paper read before the Institution of Post Office Engineers in London in April, B. S. Cohen described the work he has been doing on "Telephonometry," a new name the meaning of which is obvious.

The telephone engineer has the choice of two methods for measuring transmission efficiency, namely, the use of artificially-produced alternating currents of various high frequencies and their measurement, or actual voice tests through a standard cable. The latter gives the more reliable results, but it is a laborious one. Mr. Cohen has devoted much work to the development of a "telephonometer," chiefly for the purpose of making reception tests of apparatus delivered in quantities.

A wave containing the majority of the frequencies of telephonic importance is produced by an interrupter, which is varied in speed through a complete cycle of frequency progress from 700 to 1,300 cycles per second and back again. An electromagnetic receiver is employed with no resonance points in this range of frequency.

To take the place of the ear a sensitive moving-coil galvanometer is used, connected through its shunt to a carbon rectifier, which is at the center of one winding of a 1:1-transformer. The other winding is connected through one or more audion gas discharge relays and thence to the high winding of a 1:5-step-up coil, the low side of which is joined to the standard cable. With the rhythmic transmitter described, a steady deflection is obtained on the galvanometer.

The results obtained through the use of the telephonometer agreed very closely with those given by speech tests. The time taken for the test is but a small fraction of that required by the speech method.

Getting the Co-operation of Subscribers.

In the latest issue of its directory, the United Telephone Co., Monroe, Wis., of which P. J. Wierich is general manager, is an inserted leaf addressed "To Our Subscriber," which says:

"In presenting directory No. 16 of the Monroe exchange we wish to ask the co-operation of our subscribers and again invite you to come to our central office and see our methods of operation.

The telephone business is peculiar in many ways, but perhaps its most pronounced peculiarity is the dependence of good service upon the co-operation and understanding of three parties, viz.: The party calling, the party who makes possible the call (the telephone company) and the party called. To promote a better understanding between the three parties upon which the result of service rests, we ask you to read not only 'The Suggestions to Help the Service' upon the first and second pages of this directory, but also all articles in newspapers or magazines that mention telephone service.

Your truly,
The United Telephone Co."

In addition to this notice, the matter of tree trimming is brought to the attention of subscribers by means of a little card, neatly printed and arranged, which reads as follows:

"Please trim your trees. You can do this better than anyone else and cheaper than anyone else. Please go out and see *now* whether or not the leaves *are going* to touch the wires; if they are, clip the branches *now*. If each one does this, it will help your own service and your neighbors' service. Let's Clean Up The Lines! Thank you for this co-operation for better service. The United Telephone Co."

Annual Report of the British Postmaster General

Effect of the War Upon Telephone Growth and Development in Great Britian Shown in Annual Report for the Year Ended March, 1915, Which Embraced Eight Months of War Period—Standard of Efficiency Maintained in Spite of Demands for War Purposes

The outbreak of war, the British postmaster general states in his annual report recently made public, has naturally seriously affected the telephone side of the post office work, and regard must be had to this fact when considering the telephone statistics and expenditures for the year ended March, 1915, which embraced eight months of the war period. Except for a serious destruction of telephone plant caused by storms in the winter, and disturbances due to the bombardment of coast towns and air raids, the standard of efficiency has been well maintained in spite of exceptional demands made upon the staff for war purposes.

So far as the development of the service from the point of view of the number of stations is concerned, new orders have fallen off to the extent of approximately 27 per cent. since war was declared, while the number of subscribers giving up their telephones has increased by 29 per cent. On the other hand, nearly 10,000 circuits have been provided specially for the naval and military authorities and other government departments for emergency purposes.

The number of telephones owned by the post office and in use on March 31, 1915 (exclusive of those provided specially for the temporary use of the naval and military authorities), was 796,347, made up as follows:

	Exchange stations.	Private wire stations.	Total.
London	253,436	13,939	267,375
Provinces:			
England and Wales	384,591	24,834	409,425
Scotland	87,832	5,436	93,268
Ireland	23,706	2,573	26,279
United Kingdom	749,565	46,782	796,347

The post office was also responsible for the maintenance of 2,289 telephones which are the property of subscribers. It is estimated that during the year 815,000,000 effective calls were originated, a decrease of 2.3 per cent. as compared with the figures for the previous year. The average number of calls per telephone per day was 2.97. Since the outbreak of war, local telephone traffic has decreased by some 7 per cent., but the increase in the number of long distance calls has been slightly above the normal, chiefly owing to the large number of emergency calls on behalf of the naval and military authorities.

Notwithstanding the fact that large numbers of the engineering staff have joined the British military forces, that others have been largely employed on the provision of emergency circuits for the naval and military authorities, and that it has been necessary to restrict capital expenditure as much as pos-

sible, the number of new exchanges opened in localities not previously served telephonically during the year 1914-15 was 232. This compares with 184 new exchanges in the previous year and 55 in 1912-13. Of the new exchanges, 189 were opened in England and Wales, 32 in Scotland, and 11 in Ireland. The total number of exchanges open on March 31, 1915, was 3,052. During the year 1914-15, pay stations to the number of 2,136, or 231 more than in 1913-14, were established. Of these, 1,531 were provided with full long distance facilities, and 123 with restricted long distance facilities, the remaining 482 being opened for local service only.

During the year 1914-15 the number of exchanges connected directly with the general long distance system was increased by 76; and 570 additional trunk circuits were completed, involving an addition of 40,727 miles of wire (exclusive of spare wires). The number of long distance calls increased by 2,614,587, or 6.89 per cent. as compared with the previous year. At 34 towns where separate long distance and local exchanges had existed for many years the exchanges were amalgamated, the long distance service being much improved thereby. Separate trunk and local exchanges now exist at 83 towns only, as compared with 293 at the time of the transfer of the National Telephone Co.'s undertaking in 1912.

Owing to the war the provision of additional circuits, and more particularly the provision of new underground telephone cables, has been hampered, but nevertheless considerable progress has been made. New cables have been laid and brought into use between London and Guildford, London and Slough, and between Sheffield and Barnsley. The new cables between London and Birmingham, London and Brighton, Glasgow and Edinburgh, and between Newcastle and Sunderland, mentioned in last year's report, are nearly completed, and will be brought into use shortly. Numerous works of this character already in hand are being completed as rapidly as circumstances will permit, but no new works of the kind are being undertaken. An accelerated trunk service, similar to that introduced last year between Liverpool and Manchester, was introduced between Bradford and Leeds; and a very satisfactory increase in traffic ensued.

The Anglo-Continental services have been suspended since the beginning of the war.

Automatic telephone exchanges are now in operation at the General Post Office (London), Accrington, Chepstow, Darlington, Epsom, Hereford and Newport, and are giving satisfactory service. Similar exchanges are being installed at Blackburn, Dudley, Grimsby, Leeds, Paisley and Portsmouth. Owing to various difficulties caused by the war, the introduction of automatic exchanges has not proceeded so rapidly as was anticipated.

During the year ended March 31, 1915, a continuous telephone service was introduced at 73 exchanges where previously the service had been restricted. The number of exchanges which are at present without a continuous service has thus been reduced to 357 out of a total of 3,052 exchanges. Continuous service has also been provided at many rural pay stations to enable the naval and military authorities and the police to obtain, in addition to telephonic communication, direct connection at any hour of the night with important telegraph offices. During the year 849 stations of this class were installed, the total number of stations operating on March 31, 1915, being 2,265. No new work is being undertaken.

The following figures show the estimated extent to which the telephone is being used for sending telegrams and express or ordinary letters:

	1913-14.	1914-15.	Increase or decrease per cent.
Telegrams	6,834,000	7,748,000	13.4 Inc.
Express letters	226,400	191,000*	15.6 Dec.
Ordinary letters	6,300	6,700	6.3 Inc.

*Telephone express delivery has been suspended in London since August, 1914.

The number of telegrams delivered by telephone in 1914-15 represented 4.78 per cent. of the total number of telegrams delivered, as compared with 5.13 per cent. in 1913-14.

The receipts in respect of private telephone lines amounted to $1,315,540 (£263,108) only, as compared with $1,543,920 (£308,784) in 1913-14, the reduction being principally due to rebates in connection with lines temporarily taken over by the naval and military authorities.

The net revenue account for post office telegraphs for 1914-15 shows a deficit borne by the exchequer of $6,246,405 (£1,249,281). With reference to this amount it is stated that the cables have been largely used for war purposes, and it is not possible to estimate the cost of the services rendered. An expenditure of $494,420 (£98,884) was also incurred in respect of post office employes serving with the colors. In the account for telephones the deficit for the year is $535,210 (£107,042), and it is stated that this amount is an inflated one, as since the war the telephone service to the continent has been used for war purposes. The telephone service has also been largely used in transmitting telegraph messages, and an expenditure of $351,080 (£70,216) was incurred in respect of the employes serving with the colors.

Proceedings Before Commissions, Courts and Councils

Discussions and Rulings of State Bodies Having Supervision Over Telephone Companies, Decisions of Courts in Matters of Interest to Public Utilities and Actions of City Councils Relative to Franchises, Rates and Service

Conference to Determine Scope of Kentucky Utilities Act.

Representatives of the Central Home Telephone & Telegraph Co., the Louisville Home Telephone Co., the Cumberland Telephone & Telegraph Co., the Western Union and the Postal telegraph companies were present to confer with the members of the Kentucky Railroad Commission at a meeting held on May 29 at the Seelbach Hotel. It was an all-day session and was given over to consideration of the legislation enacted last winter, by which the commission will determine the scope of the law in relation to itself. This will come, eventually, in the form of a ruling from the attorney general of the state, although it is expected that sooner or later the matter will be threshed out by the courts and the exact scope of the law defined.

This legislation, it may be stated, was framed originally with a view to the establishment of a public service commission but when the state of the commonwealth's treasury was considered, it was determined instead to add this form of regulation to the duties and powers of the state railroad commission. The commissioners, busy anyway, may be expected not to be overly keen to undertake any more additional work than they have to and the conference was by way of determining what they would have to do in the way of regulating telephone and telegraph tolls. No definite conclusions were reached.

The question was raised, however, as to whether there would be anything gained by the commission attempting to regulate rates in cities where the companies are operating under franchises, while it was observed that the commission might be appealed to in settling differences.

The law provides that the telephone companies, etc., will have to make regular reports to the commission and it was suggested that reports similar to those which are made to the

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Brush treat your poles as illustrated, with Barrett's Grade-One Liquid Creosote Oil. It is convenient, economical, effective.

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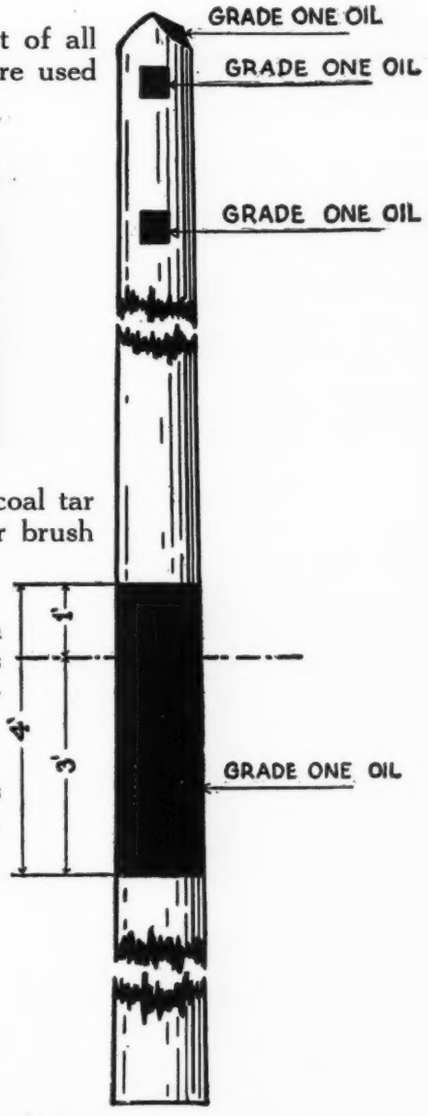

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Interstate Commerce Commission would probably suffice. A committee composed of the rate clerk and secretary of the commission was named to confer at a later date on the matter as to the form of reports to be made. If the same information that is supplied the Interstate Commerce Commission will answer, duplication of bookkeeping will be spared the telephone, telegraph and other companies.

It was pointed out that some cities are imposing regulations on telephone companies which regulate rates outside the cities, while counties are now selling telephone franchises. That the intrastate toll service will come under the commission there is no doubt. It is pointed out also that the more extensive the operations of a telephone company, the more cheerful it will be over submission to the authority of a commission, since it would then have to deal only with centralized authorities, instead of having to deal with city councils and commissions and fiscal courts everywhere, none of the members of which know much, if anything, about telephone operations.

Court Sets Aside Commission Order in Oregon.

Declaring that the parties to the contract or franchise between a city and a public utility are the only ones who can change it, Judge Galloway, in the circuit court at Salem, Ore., has set aside an order of the Oregon Public Service Commission increasing the rates of the Western Telephone Co., in Woodburn.

The decision is based on the home rule amendment of the state laws. The city of Woodburn brought the suit to set aside the order, naming the public service commission and the Western Telephone Co., as defendants. The decision affects a question of far-reaching importance, as it was contended, if the Woodburn franchise could be set aside by the commission, without the city's consent, other franchises would not be immune. The old franchise provided that the maximum telephone rates should be not over $1.50 for business service, and correspondingly low rates for residence service. Increases were ordered by the commission on all rates, and the reasons given were that the consolidation of rural lines with the city system gave the people better service, and that the company was not getting adequate returns on its investment.

The commission will appeal the case to the supreme court.

Final Arguments on Sale of Chicago Automatic Plant.

Final arguments on the application of the Chicago Tunnel Co., for permission to sell its automatic telephone properties in Chicago to the Chicago Telephone Co., were heard by the Illinois Public Utilities Commission on Thursday and Friday, of last week, May 25 and 26. Attorney David F. Hall, representing the American Telephone & Telegraph Co., stated that the order, if issued, should be in definite terms and not dependent upon getting together with the Independents relative to connections. The American Telephone & Telegraph Co., he said, is not willing to donate two or three million dollars and in addition accept conditions which would involve a further loss to itself and its subsidiary companies. Attorneys for the various parties interested in the case presented their final arguments, after which the hearing was adjourned.

It is expected that a decision will soon be handed down by the public utilities commission.

Proposed Changes in Baltimore Telephone Rates.

A readjustment of the telephone service schedule for Baltimore and the state of Maryland, was proposed by the Chesapeake & Potomac Telephone Co., at a conference with the Maryland Public Service Commission and Assistant General Counsel Osborne I. Yellott, on May 23.

The most important changes proposed by the telephone company are as follows:

That the flat P. B. X., or branch exchange charge, be cut from $30 a year to $24.

Under the present schedule P. B. X. customers who use 8,400 calls a year or more pay 2 cents a call, and those using 3,000 calls or more pay 3 cents a call.

It is proposed to split this rate and have a flat charge of 2½ cents a call up to 2,400 and 2 cents for excess calls.

On other than P. B. X. telephones the charge in the city will remain the same, but the subscribers will be given a more extended service with the suburbs without additional charge.

In the suburban section it is proposed to extend the city-rate area for a mile and a half all around the present boundaries of the city, covering about the same territory as was included in the annexation plan. In this section all mileage charges will be done away with. The regular city rate of $48 a year will apply, but on this rate the suburban subscriber will have the use of both the suburban and city exchanges without extra charge.

If the subscriber does not desire to take this rate he may remain on the old basis, but will have the added advantage that incoming calls to his telephone from the city will not have any extra charge attached.

California Supreme Court Ruling on Physical Connection.

That two telephone companies must make physical connection when so directed by the railroad commission was recently decided by the Supreme Court of California, in a decision handed down in a small case arising in Los Angeles county.

The Camp Rincon Resort operates a summer camp in San Gabriel canyon, and has a telephone line down the canyon, connecting with a Home Telephone Co.'s exchange in the valley. The Cold Brook Camp Co. also operates a camp and its telephone line was formerly connected with the Camp Rincon wire. The Camp Rincon company cut off its competitor, and the railroad commission directed that connection be re-established.

The contest was of such importance that the point was carried up to the supreme court, it is said, by much larger companies.

The Camp Rincon company claimed before the supreme court that it is not a public utility, even if it owns the wires from the camp, and that the commission has no right to compel it to connect with another line.

The court held that inasmuch as the Camp Rincon company allows its campers to use the line, it is operating the line for compensation, and hence is a utility. It was also held that the Cold Brook company's line, being used by campers, is a utility, and that the commission has the right to enforce connection between the lines.

Rate Increase Granted at Tucson, Ariz.

The Arizona Corporation Commission has authorized the Mountain States Telephone & Telegraph Co., to put into effect, in Tucson, Ariz., the following increased schedule of rates upon the completion of the construction work now in progress:

Individual business telephone, $4.00 per month.
Individual residence telephone, $3.00 per month.
Two-party residence telephone, $2.50 per month.
Four-party residence telephone, $2.00 per month.

To Test Jurisdiction of Michigan Railroad Commission.

Immediate and decisive action to determine whether the Michigan Railroad Commission or the Detroit common council has jurisdiction over the adjustment of rates of the Michigan State Telephone Co., in Detroit, is to be taken by

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A Word to Makers and Users of Condensers

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Then use, or specify, Metallized Paper—Mansbridge patent—instead of the old fashioned solid foil.
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Millions—literally millions—of Condensers made from metallized paper—Mansbridge process—are now in use all over the world, and the number of satisfied users increases daily.

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Improvements recently perfected make more accurate the Calculagraph record of time consumed in toll messages. They also make the machine more nearly "Fool Proof."

In a report to all Bell and associated companies, the Engineering Department of the A. T. & T. Co., says:

"In view of the improved accuracy of the modified Calculagraph, it is our opinion that it is the best timing device available and will prove entirely satisfactory in all toll offices."

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We ship standard stock within 3 days of order.
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Costs little to lay, because it is light, and the joints are simple and true.

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Corporation Counsel Dingeman, who will go directly before the state supreme court and demand a writ of prohibition "against the assumption of jurisdiction by the state railroad commission."

Attorney Otto Kirchner will aid Corporation Counsel Dingeman in the fight before the supreme court.

Ruling on Physical Connection in Washington.

Under the statute of the state of Washington regulating telephone companies and providing that when they have failed to establish joint rates, and joint rates ought to be established, the public service commission may by order do so, the commission has no authority to establish joint rates until the companies having physical connection fail so to do, and the companies have in the first instance the right to establish joint rates.

The Washington Public Service Commission, ordering the physical connection between the lines of the *I.* and *S.* telephone companies, has no authority in the first instance to make any rules to prevent interference between the *I.* company and the *P.* company when using the lines of the *S.* company, for the *P.* company has no vested right to prevent the use of the *S.* company's lines by the *I.* company, and, where such use interferes with the use by the *P.* company, it must avoid the same by mechanical means or by operating rules put in force by the companies interested. Washington Public Service Commission vs. Skagit River Telephone & Telegraph Co.; Supreme Court of Washington; 155 Pacific, 144.

Company Liable for Slander of Operator by Manager.

A statement by the manager of a telephone company to an employe that the company did not allow girls to work for it who were not ladies; that she and her roommate had had men in their room at night, the court held, were slanders per se. A telephone company is liable for a slander, uttered by its manager in discharging an employe, as a violation of its duty to protect young ladies employed by it from insult and slander by its manager in the conduct of its business.

A slander, uttered by the manager of a telephone company in offering employment to another in place of plaintiff, who was discharged, and giving the reason for the discharge, was not within the scope of the manager's employment. Southwestern Telegraph & Telephone Co. vs. Long; Court of Civil Appeals of Texas; 183 Southwestern, 421.

Franchise Tax Not Included in State Tax.

Section 6 of chapter 84 of the South Dakota laws of 1911, substituting taxes levied upon telephone companies under the act for all other taxes, including taxes upon earnings imposed by any law, ordinance, or municipal regulation, does not include a percentage of the yearly receipts of a company, which it has contracted to pay in consideration of the franchise granted it, as the amount so contracted is not a "tax" within the meaning of the act, but is in the nature of a rental or compensation for the privileges granted. City of Mitchell vs. Dakota Central Telephone Co.; Supreme Court of South Dakota, 156 Northwestern, 63.

Oklahoma Mutuals Not Under Commission Jurisdiction.

Section 5, article 9, of the constitution of Oklahoma provides that all telephone and telegraph lines, operated for hire, shall each, respectively, receive and transmit each other's messages, without delay and discrimination, and make physical connections with each other's lines, under such rules and regulations as shall be prescribed by law or by any commission created by this constitution, or any act of the legislature for that purpose. The supreme court held that only telephone lines operated for hire are placed, by article 9 of the constitution, under the jurisdiction of the corporation commission. Rural or farmers' lines operated on the mutual plan, without any charges or toll for use of the line, are not subject to regulation by the commission. Limestone Rural Telephone Co. vs. Best; Supreme Court of Oklahoma; 155 Pacific, 901.

Summary of State Commission Hearings and Rulings.

ARIZONA.

May: The commission authorized the Mountain States Telephone & Telegraph Co. to put into effect in Tucson, Ariz., an increased schedule of rates upon the completion of the construction work now in progress.

May: The commission granted Edmund E. Walton a certificate of convenience and necessity to build a telephone line to serve the mining district in Pima county.

ILLINOIS.

May 25 and 26: Final arguments heard on the application of the Chicago Tunnel Co. for permission to sell the automatic telephone plant in Chicago to the Chicago Telephone Co. Case 4,895.

June 5: Continued hearing on the petition of the City of Peoria vs. the Central Union Telephone Co., to compel the Central Union company to reduce its rates to Peoria subscribers.

INDIANA.

May 23: Petition filed by citizens of Petersburg, Ind., asking the commission to order the Pike County Telephone Co. and the Southern Indiana (Bell) Telephone Co., of Evansville, Ind., to interchange toll and long distance business.

KANSAS.

May: The commission granted permission to the American Independent Telephone Co., of Holton, Kan., to abrogate certain discriminatory contracts with certain subscribers and to charge those subscribers the rates now charged all other patrons, in accordance with the rates on file with the commission.

May: In the matter of the application of the American Independent Telephone Co., of Holton, Kan., for permission to discontinue service between Holton and Mayetta, Whiting, Larkin, Denison and Netawaka, the commission ordered that the service between the subscribers of the petitioner's exchange at Holton, and the subscribers of the exchanges operated at the towns of Mayetta, Whiting, Larkin, Denison, Netawaka and Circleville, shall be free for the first three minutes; a charge of five cents shall be made for each additional minute or fraction thereof after the toll operator has notified the parties of the expiration of the free time limit, the proceeds of such charges to be divided between the several exchanges on an agreed basis.

May 25: Application filed by the United Telephone Co., of Abilene, Kan., for permission to issue $28,000 in common stock for the purpose of taking over the Lincoln Telephone Exchange, at Lincoln, Kan.

May 25: Application filed by F. W. Herman for permission to sell the Lincoln Telephone Exchange, at Lincoln, Kan., to the United Telephone Co., of Abilene, Kan.

KENTUCKY.

May 29: Conference at which the provisions of the act of the last legislature placing telephone and telegraph companies under the jurisdiction of the Kentucky Railroad Commission were discussed.

MICHIGAN.

June 15: Continued hearing on application of the Michigan State Telephone Co. for permission to install metered service in its Detroit exchange.

MINNESOTA.

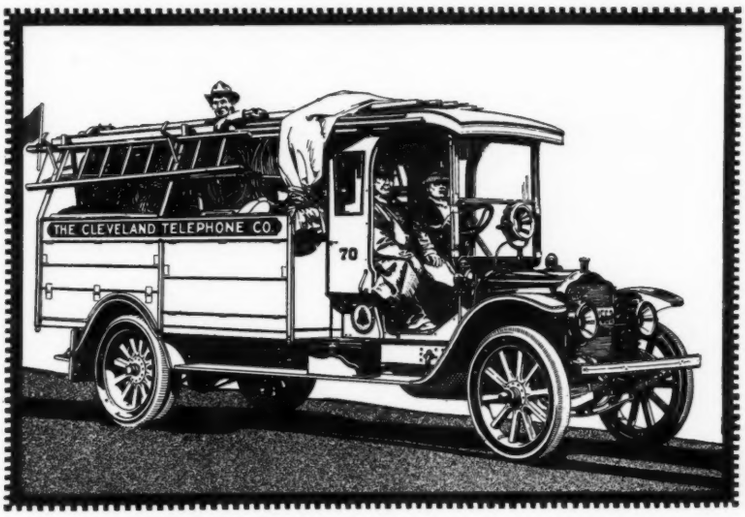
June 5: Continued hearing on the petition of the City of Owatonna for a physical connection between the toll lines of the Tri-State Telephone & Telegraph Co. and the local exchange of the Northwestern Telephone Exchange Co. at Owatonna, Minn. The testimony of the Bell company was taken at the hearing held April 3 to 6 and the testimony of the City of Owatonna and the Tri-State company will be heard on June 5 at St. Paul.

MISSOURI.

September 18: Hearing in the matter of adopting a uniform system of accounts for telephone companies. Every telephone company in the state has been given notice that it will be expected to be present or to be represented, and to introduce any evidence necessary to assist in the promulgating of a uniform system of accounts for telephone companies. Case 937.

September 18: General conference in which representatives

Largest Manufacturers of Commercial Motor Vehicles in America



31 Telephone Companies own more than 175

WHITE TRUCKS

WHITE Trucks predominate in the service of telephone companies, large and small, just as they do in practically every other line of business where transportation is involved. Large users know by experience the economy of White Trucks. They buy them in fleets and add to these fleets year after year, basing their selection upon accurately kept cost records.

White engineers have made an exhaustive study of the requirements of telephone service and have designed special types of trucks to cover all phases of light construction, installation and maintenance work, tower trucks for line work, and power winch trucks for aerial and underground cable construction work.

We will be glad to send you detailed information describing these trucks.

THE WHITE COMPANY
CLEVELAND

Awarded the only Grand Prize for Motor Trucks at Panama Pacific International Exposition

Please tell the Advertiser you saw his Advertisement in TELEPHONY.

of all telephone companies in the state are to meet with the commission and to introduce all testimony and evidence required in the adoption of uniform rules, regulations and practices for telephone companies, relative to all charges, deposits, contracts, or guarantees for all kinds of service and connections. Case 938.

MONTANA.

May 18: The commission ordered the telephone companies in the state to show, within 20 days, cause why the commission should not make an order limiting subscribers on rural lines to three-minute calls.

NEBRASKA.

May: Conditional upon certain improvements being made, the Citizens Telephone Co., of Malmo, Neb., was granted permisson to increase its rates on farm lines at Malmo, Prague, Weston and Morse Bluff from $1 to $1.25 per month. Subscribers will be given unlimited communication with one town besides their own. When service is desired regularly to more than one extra town, a charge of $1 per month will be made for each additional exchange.

May: Application filed by the Platte County Independent Telephone Co., of Columbus, Neb., for permission to issue $25,000 of additional stock to pay for improvements which have been made to the company's plant.

NEW JERSEY.

May 19: The commission granted permission to the Delaware & Atlantic Telephone Co. to purchase the properties of the Egg Harbor City (N. J.) Telephone Co.

May 19: The commission authorized the Delaware & Atlantic Telephone Co. to enter into an agreement with the Washington Electric Co. for the joint use of poles in Washington, Warren county, N. J.

NEW YORK.

May 28: Hearing at New York on complaint of Samuel Silverman, M. D., against the New York Telephone Co., asking that a coin box telephone be installed in his garage on Sterling Place, Brooklyn, N. Y.

OKLAHOMA.

June 13: Hearing in the case of the United Telephone Co., of Afton, vs. the Pioneer Telephone & Telegraph Co., relative to the routing of toll messages, at Oklahoma City.

WASHINGTON.

May 31: Postponed hearing on the investigation of the Pacific Telephone & Telegraph Co. in the state of Washington. At this hearing the commission will consider the matter of rates; the segregation of properties used for local and toll service in the larger cities of the state, and the question of discrimination and of switching rates of farmers' lines.

WISCONSIN.

May 27: The Matheson Telephone Co., of Clintonville, Wis., filed notice that it has withdrawn its non-subscriber charge to boarders in subscribers' households.

May 27: The Marshfield Telephone Co., of Marshfield, filed a rate of 10 cents per month auxiliary for receivers.

May 27: The Edgerton Telephone Co., of Edgerton filed notice that it has discontinued its practice of collecting rentals by collectors. A monthly billing system will be installed and delinquents will be disconnected.

May 29: The Wisconsin Telephone Co. filed an amendment for its rates in Ashland. The yearly one-party business is reduced from $48 to $42; the two-party rate from $36 to $30 and the rate for trunk lines for private branch exchanges from $36 to $30 per year. These changes took effect June 1, 1916.

May 31: Hearing at Wausau in the case of J. B. Thompson, et al., vs. the Wittenberg Telephone Co., in regard to rates, rules and service. Case U—919.

June 2: Postponed hearing at Denmark in the case of the Denmark Farmers & Merchants Telephone Co. vs. the Brown County Telephone Co., the Wisconsin Telephone Co. and the Wayside Telephone Co., in regard to connection and rates.

June 6: Hearing on application of the Necedah (Wis.) Telephone Co. for permission to increase its rates. The petition asks permission to establish a rate of $1 per month for residence telephones and $1.75 per month for business telephones.

From Factory and Salesroom

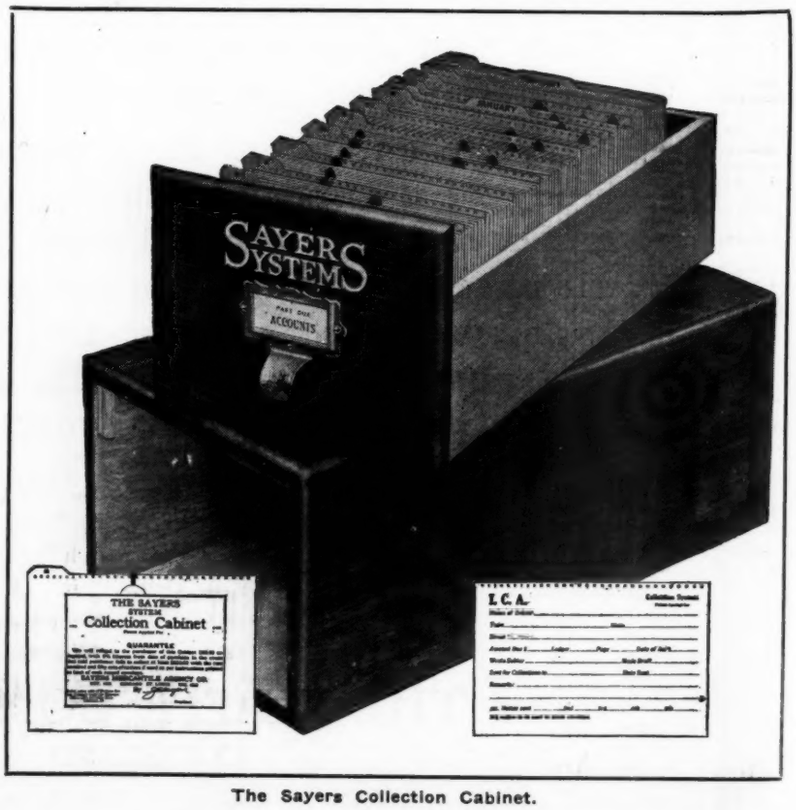
Cabinet for Collecting Past Due Telephone Rentals.

The collection of telephone rentals forms a big problem to many telephone companies and unless some systematic means are adopted to push the collection of these old accounts, it results in a loss to the company of both the money and the subscribers.

The Sayers collection cabinet is said to be adapted to a thousand or a million-dollar business and provides a system that pushes debtors firmly, but gently, saving both money and patrons. The cabinet furnishes an individual record of the condition of each individual account, leaving no chance of error or neglect, which is a direct cause of a large percentage of losses. It separates and classifies every past due account on a company's books. The installation of this system, it is maintained, means a decrease in both work and expense, being very simple to operate.

The cabinet, a photograph of which is reproduced in the accompanying illustration, is made of quarter-sawed oak and contains 250 sets of notices and there are five notices to each set, enclosed in a 4 by 6-inch envelope with space for the debtor's name, address, amount of account, etc. The cabinet also contains sets of indexes, membership card, block of applications for credit blanks, copy of 12 collection letters and a card of instructions.

With the use of this system an Independent telephone company of Illinois collected $1,047 of old accounts in 17 days. Another company collected $695 in 26 days, another $217 in 25 days, and others might be mentioned. A signed guarantee is placed on each cabinet shipped that the full purchase price will be



The Sayers Collection Cabinet.

Save 25% to 40% On Your Insurance

"Buy Your Insurance At Cost"

¶ This is the keynote of the Utilities Indemnity Exchange, which has been operating with great satisfaction in the electrical and telephone field.

¶ The UTILITIES INDEMNITY EXCHANGE enables its members to save a large portion of the premiums which they would ordinarily pay Old Line Insurance Companies, by insuring them on a "Reciprocal Plan" known as "Inter-Insurance." Each member is guaranteed against any assessments. Therefore you have all to gain and nothing to lose.

¶ The losses are distributed among the members at actual cost with all unnecessary overhead charges eliminated and all claim settlements are made on an equitable basis with due regard to the humane treatment of injured employes.

¶ This plan, which has been endorsed by the former National Independent Telephone Association, enables those engaged in the electrical and telephone industry to insure themselves against injury claims and fire losses at "actual cost" as many of the enormous overhead charges and operating expenses commonly prevalent in insurance companies are eliminated.

¶ The Exchange also carries Automobile Insurance on a carefully selected line of privately owned cars at a saving of 25% to 40%.

Utilities Indemnity Exchange

LYNTON T. BLOCK

Attorney and Manager

RAILWAY EXCHANGE BUILDING

ST. LOUIS, MO.

refunded if the cabinet's use fails to collect at least $250.

The Sayers collection cabinet is manufactured by the Sayers Cabinet Mfg. Co., 20 East Jackson boulevard, Chicago, which will be glad to furnish further information.

Owosso, Mich., Exchange of Union Telephone Co.

The thriving and beautiful city of Owosso, Mich., had its beginnings in an old Indian trading post from whence

The Owasso Exchange Building of Union Telephone Co.

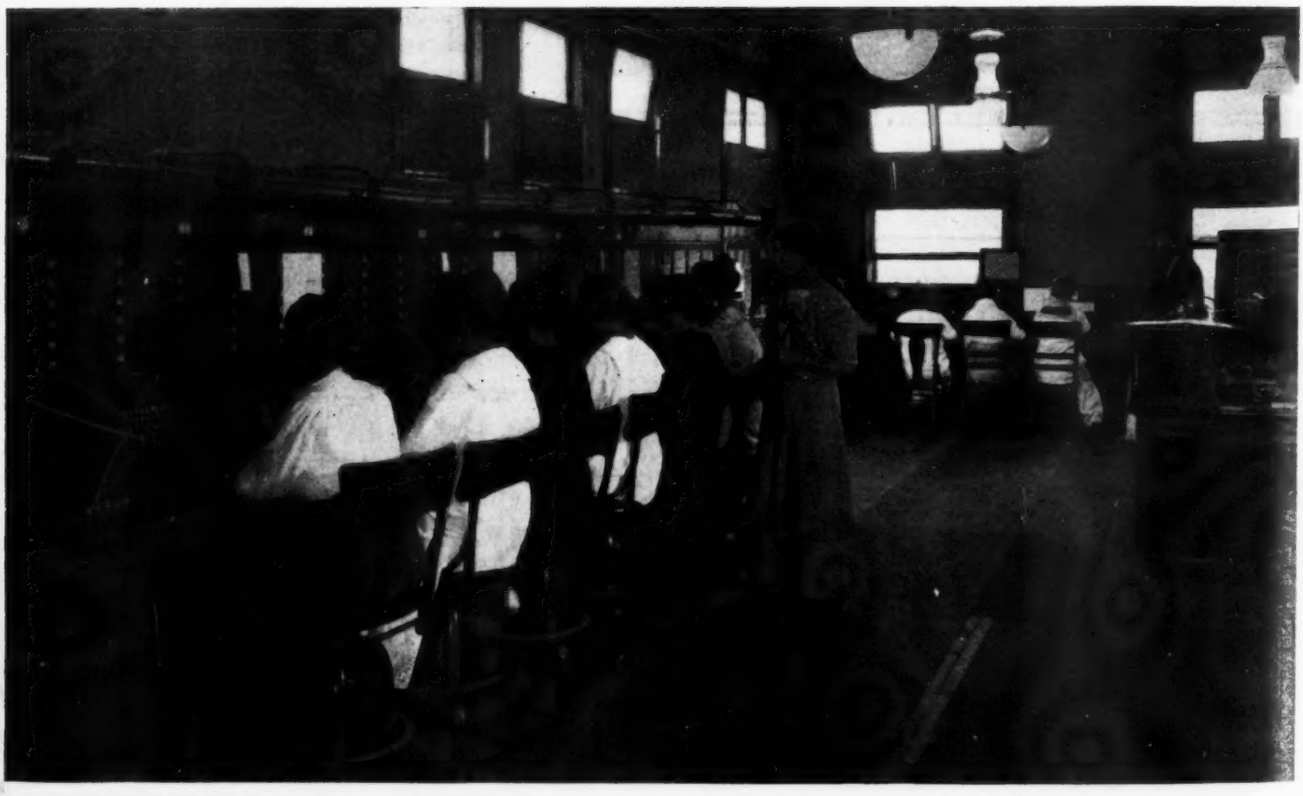
came its name. Could the first inhabitants revisit the scenes of their pioneer existence, probably to them the most wonderful thing about the city's present activity would be its telephone service, for Owosso not only boasts of a telephone service the peer of the best in the world, but it has a telephone building and plant that is a model of its kind.

The growth of this exchange, the principal plant of the Union Telephone Co., has been markedly successful under the management of W. J. Melchers. There are today 48 Kellogg equipped exchanges in the Union Telephone Co.'s system, from the universal switchboard at Owosso with a present installation of 413 common battery telephones, 827 magneto city subscribers and 551 rural sets, to its smallest magneto board. As Mr. Melchers says: "There is not a drop in our system but Kellogg and every telephone in each exchange is Kellogg." This is said to be significant when the extraordinary success of the company is considered.

While each of the 47 magneto exchanges owned and operated by the Union Telephone Co. is typical of the high class modern Independent magneto exchanges, perhaps the most interesting installation is the Kellogg universal board at Owosso.

The Telephone Office Reveals an Efficient Business System.

This equipment was installed in March, 1913, with an initial capacity of 3,200 lines. Its equipment at that time was 980 universal lines. There were, in addition, a modern wire chief's desk and a chief operator's desk, a terminal



The Kellogg Universal Switchboard in the Owasso, Mich., Exchange of the Union Telephone Co.—Toll Board in the Background.

First aid to the injured!

Simplex Pole Jacks Rescue Service

What would YOU do if a storm should unexpectedly attack your lines and lower your poles?

With service jeopardized, wouldn't you want to restore it as soon as possible? WOULD YOU CONSIDER THE COST?

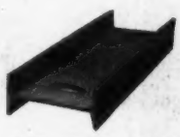
In many cases where service has become crippled, SIMPLEX POLE JACKS have proved to be the first and best aid to the injured lines. Merely a matter of a few minutes to straighten or "yank" the broken poles or stumps from their holes, or to install new poles with a SIMPLEX JACK.

"It pivots on its base."

The I-beam base is placed beside the pole—the jack set upon it —chain wrapped about pole—one end of chain dropped in recessed chain gap and lever operated. A matter of only a few minutes to straighten the pole and reinforce base.

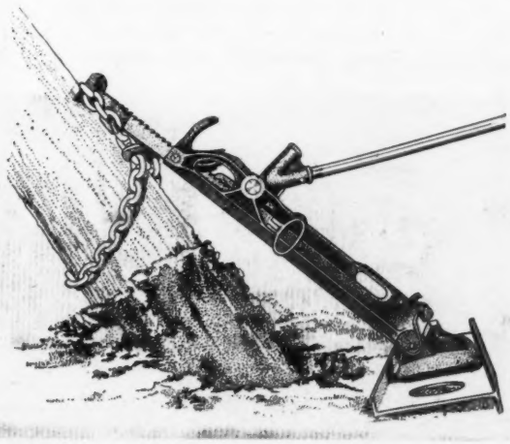
No Trouble—No Time Lost —No Accidents

Wouldn't it be an advantage for you to have a SIMPLEX JACK?



I-Beam Supporting Base

Templeton, Kenly & Co., Ltd.
1020 S. Central Ave.
Chicago, Ill.



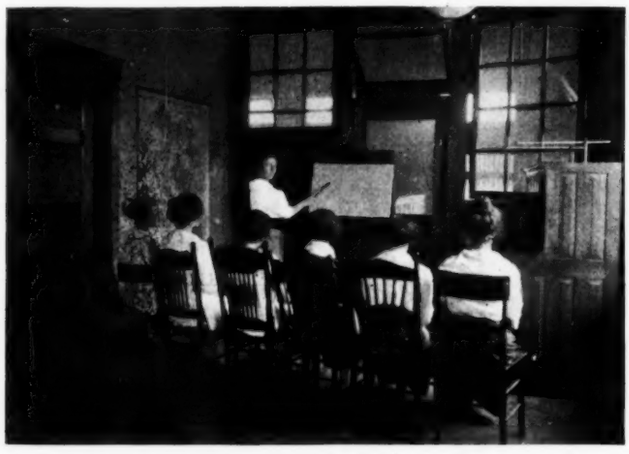
and arrester rack, mercury arc rectifier, two sets of storage batteries and two sets of pole changers.

The switchboard is a three-section, steel frame, quarter-sawed oak cabinet, with a capacity of nine operators' positions, seven positions being installed at the time of the cut-over.

This switchboard has enabled the Union Telephone Co. to give an exceptional range of service in Owosso. It enabled it to offer at once the more desirable common battery service at higher rate, without any hazardous general rate-raising. In three years of service, it has enabled the company to gradually convert the exchange from magneto service to common battery, without trouble or complication, while giving the highest class magneto service.

The operators handle a great many lines without difficulty and are much pleased with the simple yet reliable operating of the universal switchboard. Fewer operators give better service, it is claimed, with the Kellogg universal than with the straight magneto equipment.

It is the viewpoint of the operating men at Owosso that this method is the logical way to raise rates, as they find no trouble in convincing subscribers of the additional value



Operators Receive Great Benefit From the School.

to them of common battery service as compared with the "telephone with the cranks." As both types are operated simultaneously with the same simple standard equipment, the change is made with the minimum expense and with the increased good will of the new common battery subscribers.

Comparing the present total subscriber list of 1,791 telephones with the equipment cut over three years ago, speaks well for the success of the Kellogg universal at Owosso. Its records elsewhere, according to managers of exchanges in which it is installed, show equal success.

The Union Telephone Co. was founded in 1899; its first switchboards being located in Alma, Ithaca, and St. Louis, three towns situated in a triangle. The company was originally capitalized at $25,000. It now has a capital stock of $1,000,000.

Outside of Owosso, which is the only common battery plant of the company, the towns average three-section

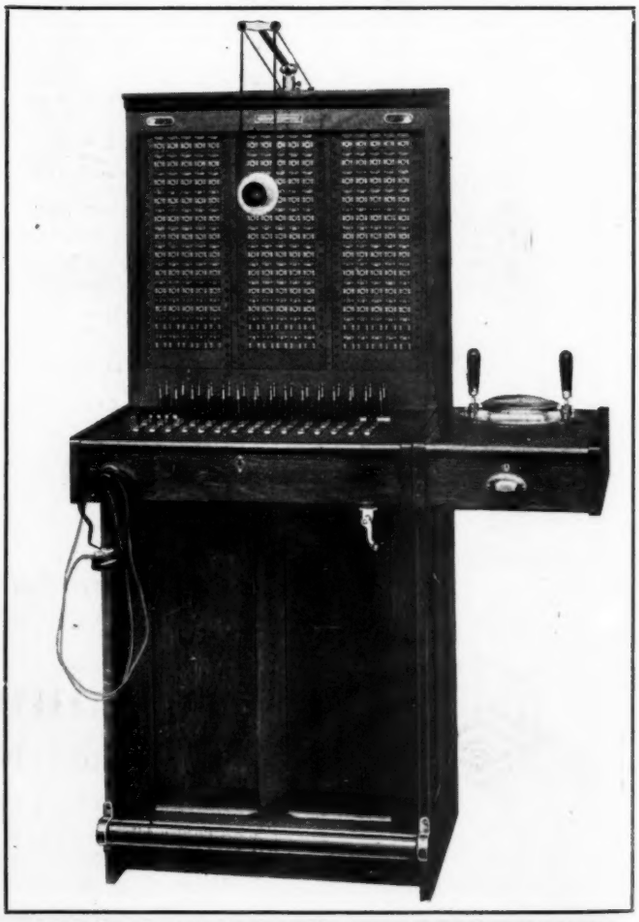
The Repair Shop Is Prepared for Rush Work.

magneto switchboards. All of these old Kellogg switchboards are said to have really wonderful records for steady service with a very low up-keep cost.

There are, at present, over 13,000 magneto sets in service in all exchanges of the Union Telephone Co., with additional connecting companies using about 3,000 more.

Extension Key Shelves—a Useful Acessory.

In many small exchanges the switchboard operator uses the space beneath the key shelf as a receptacle for everything

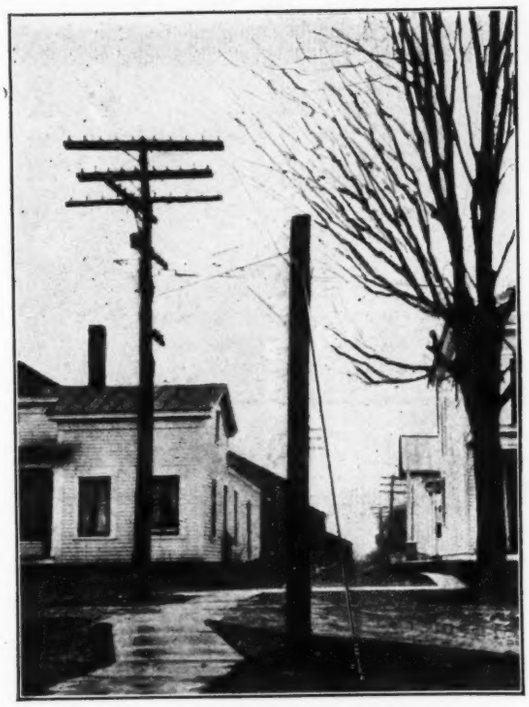


Switchboard with Stromberg-Carlson Extension Key Shelf.

The Rest Room Is Light, Airy, and Comfortable.

Before Buying Anchors, Read This

Unsolicited Tribute to the "Harpoon"



This Is the Pole Referred to

December 3, 1915

Crouse-Hinds Company,
Syracuse, N. Y.

Gentlemen:-

Kindly send me copy of the Harpoon Guy Anchor Catalog and give me name of nearest jobber. We have only two of your anchors on our outside work, but they are fine. Two weeks ago we had a heavy snowstorm which took down a large number of poles and some anchors were pulled out of the ground, but yours held.

At one place in particular, one of your anchors held a big, 40-foot pole on a right angle corner. This pole carried a 30-wire lead to the left, as well as 20 wires of the Bell Company, our 100-pair cable and three heavy wires of the electric light company, all of which ran parallel to the street.

Our guy wire was run across the road and attached to a guy stub. This guy stub was anchored to the Harpoon Guy Anchor which held the whole outfit perfectly secure under probably as bad storm conditions as could be imagined. When I tell you that most of these wires were from two inches to three inches in diameter with snow and ice, and that the pole never budged an inch, you will realize the value of your equipment.

Very truly yours,

H. O. Woodward, Local Mgr.,

Erie Co. Telephone Co.,

Waterford, Pa.

Write for Harpoon Guy Anchor Catalog

Crouse-Hinds Company

Syracuse, N. Y., U. S. A.

NEW YORK BOSTON CINCINNATI CHICAGO